

Instructions

hp StorageWorks Enterprise Virtual Array Updating Product Software

VCS Product Version: 3.025 HP StorageWorks Command View EVA Version: 3.3

Sixth Edition
(March 2005)

Part Number: AA-RS29G-TE

This document contains the necessary procedures to update the product software for the HP StorageWorks Enterprise Virtual Array. This document outlines the proper upgrade process and includes detailed installation instructions for Enterprise Virtual Array product software, such as HP OpenView Storage Management Appliance software, HP StorageWorks Command View EVA, and HP StorageWorks Virtual Controller Software. For the latest version of these instructions and other Enterprise Virtual Array documentation, access the HP storage web site at <http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html>.



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hp StorageWorks Enterprise Virtual Array Updating Product Software Instructions
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About this Guide

This guide provides information to help you:

- Upgrade the Storage Management Appliance software, HP Command View EVA, and Virtual Controller Software.
- Downgrade the Virtual Controller Software.

This guide does not provide information about upgrading or changing the Enterprise Virtual Array hardware.

“About this Guide” topics include:

- [Conventions](#)
- [Rack stability](#)
- [Getting help](#)

Conventions

Conventions consist of the following:

- [Document conventions](#)
- [Text symbols](#)
- [Equipment Symbols](#)

Document conventions

The document conventions included in [Table 1](#) apply in most cases.

Table 1. Document Conventions

Element	Convention
Cross-reference links	Blue text: Figure 1
Key and field names, menu items, buttons, and dialog box titles	Bold
File names, application names, and text emphasis	<i>Italics</i>
User input, command and directory names, and system responses (output and messages)	Monospace font COMMAND NAMES are uppercase monospace font unless they are case sensitive
Variables	<i><monospace, italic font></i>
Web site addresses	Blue sans serif font text: http://www.hp.com

Text symbols

The following symbols may be found in the text of this guide. They have the following meanings:



Warning

Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or death.



Caution

Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

Note

Text set off in this manner presents commentary, sidelights, or interesting points of information.

Equipment symbols

The following equipment symbols may be found on hardware for which this guide pertains. They have the following meanings:



Any enclosed surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.



WARNING: To reduce the risk of personal injury from electrical shock hazards, do not open this enclosure.

Any RJ-45 receptacle marked with these symbols indicates a network interface connection.



WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. Contact with this surface could result in injury.



WARNING: To reduce the risk of personal injury from a hot component, allow the surface to cool before touching.

Power supplies or systems marked with these symbols indicate the presence of multiple sources of power.



WARNING: To reduce the risk of personal injury from electrical shock, remove all power cords to completely disconnect power from the power supplies and systems.

Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.



WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manually handling material.

Rack stability

Rack stability protects personnel and equipment.



Warning

To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
 - The full weight of the rack rests on the leveling jacks.
 - In single rack installations, the stabilizing feet are attached to the rack.
 - In multiple rack installations, the racks are coupled.
 - Only one rack component is extended at any time. A rack may become unstable if more than one rack component is extended for any reason.
-

Getting help

If you still have a question after reading this guide, contact an HP authorized service provider or access our web site: <http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html>.

HP technical support

Telephone numbers for worldwide technical support are listed on the following HP web site: <http://www.hp.com/support/>. From this web site, select the country of origin.

Note

For continuous quality improvement, calls may be recorded or monitored.

Be sure to have the following information available before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

HP storage web site

The HP web site has the latest information on this product, as well as the latest drivers. Access storage at: <http://www.hp.com/country/us/eng/prodserv/storage.html>. From this web site, select the appropriate product or solution.

HP authorized reseller

For the name of your nearest HP authorized reseller:

- In the United States, call 1-800-345-1518
- In Canada, call 1-800-263-5868
- Elsewhere, see the HP web site for locations and telephone numbers: <http://www.hp.com>

Chapter 1. Getting Started

This chapter provides information about the intended audience, required kits, and reference documentation. Please ensure that you have met the outlined requirements and possess all of the required materials before you begin the installation procedures outlined in this guide.

This chapter includes the following topics:

- [Intended audience](#)
- [Prerequisites](#)

Note

Use [Appendix B: Software Version Worksheet](#) to collect important version information as you read through this guide and perform the procedures.

Intended audience

This document is intended for customers who need to upgrade the StorageWorks Enterprise Virtual Array (EVA).

Note

You should read the entire guide before beginning any procedure.

Before performing the procedures in this guide, you should be familiar with the following:

- HP StorageWorks Enterprise Virtual Arrays
- SANs and storage systems
- HP StorageWorks Command View EVA
- HP OpenView Storage Management Appliance and HP OpenView Storage Management Appliance software

Note

HP recommends that you review the documentation listed in [Table 1.1](#) to familiarize yourself with the various hardware and software components.

For the latest version of these Instructions and other Enterprise Virtual Array 5000 (EVA5000) documentation, access the EVA5000 documentation web site at: <http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html>.

For the latest version of Enterprise Virtual Array 3000 (EVA3000) documentation, access the EVA3000 web site at <http://h18006.www1.hp.com/products/storageworks/eva3000/index.html> and click **technical documentation**.

During the upgrade process, you install software on the Storage Management Appliance and the HSV controllers. You will be using the Storage Management Appliance software, HP Command View EVA, and the Operator Control Panel (OCP) on the HSV controller.

HP recommends that you review the documentation listed in [Table 1.1](#) to familiarize yourself with the various hardware and software components.

Table 1.1. Related Documentation

To Read About...	Refer To...	Location
HSV110 controller HSV100 controller	<i>HP StorageWorks Enterprise Virtual Array User Guide</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/index.html and click Technical documentation .
Storage Management Appliance software v2.1	<i>HP OpenView Storage Management Appliance Software v2.1 User Guide</i>	http://h18006.www1.hp.com/products/sanworks/managementappliance/documentation.html and click Technical documentation .
HP Command View EVA v3.3	<i>HP StorageWorks Command View EVA Getting Started Guide</i>	http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00236948/c00236948.pdf and click Technical documents .
	HP Command View EVA Interactive Help File	Installed with the Command View EVA application.

Prerequisites

This section lists the required tools for successful upgrades and downgrades of the software in the Enterprise Virtual Array.

This section includes the following topics:

- [Required kits](#)
- [Recommended browsers and Java Runtime Environment](#)
- [Required licenses](#)
- [SMI-S EVA prerequisites](#)
- [Antivirus software](#)
- [Reference documentation](#)

For information about software compatibility, please see [Chapter 2: Software Compatibility Matrices](#).

Note

Before you can perform an online upgrade to Virtual Controller Software (VCS) v3.025, you must be running VCS v3.0 (or later) on the HSV controllers without HP StorageWorks Continuous Access or VCS v3.010 (or later) with HP Continuous Access installed. Contact your HP Authorized Service Representative for assistance in upgrading to VCS 3.025 from any version prior to 3.020.

Required kits

Before you begin the Enterprise Virtual Array upgrade, you must have the following kits:

- ***HP StorageWorks Virtual Controller Software Media Kit v3.0d for Dual HSV100 Controllers*** (T3589A)

Note

Use this kit with an EVA3000 (HSV100) storage system.

In addition to documentation, this kit contains the following:

- HP StorageWorks Enterprise Virtual Array System Software Version 3.025 CD
This CD contains the following:
 - VCS v3.025
 - VCS v2.006
- ***HP StorageWorks Virtual Controller Software Media Kit 3.0d for Dual HSV110 Controllers*** (T3588A)

Note

Use this kit for an EVA5000 (HSV110) storage system.

In addition to documentation, this kit contains the following:

- HP StorageWorks Enterprise Virtual Array System Software Version 3.025 CD

This CD contains the following:

- VCS v3.025
- VCS v2.006
- **HP OpenView Storage Management Appliance Software v2.1** kit (222799-B26)
In addition to documentation, this kit contains the following:
 - HP OpenView Storage Management Appliance Software v2.1 CD
This CD can also be obtained from the following web site: <http://h18000.www1.hp.com/products/sanworks/softwaredrivers/managementappliance/index.html>
- **HP OpenView Storage Operations Manager v1.2 Media and Documentation kit** (T3268AA) or **HP OpenView Storage Operations Manager v1.2 Migration Media and Documentation kit** (T3275AA)
In addition to documentation, this kit contains the following:
 - HP StorageWorks Command View EVA v3.3 CD
This CD contains the following:
 - HP Command View EVA v3.3
 - HP StorageWorks SMI-S EVA v3.3
 - HP OpenView Storage Area Manager v3.2 Software CD
This CD contains HP OpenView Storage Node Manager.

Note

Storage Node Manager is part of the HP OpenView Storage Area Manager (OV SAM) product suite. The HP OpenView Storage Operations Manager v1.2 Media and Documentation kit contains an evaluation copy of Storage Area Manager v3.2.

- **HP StorageWorks Command View EVA v3.3** CD

Recommended browsers and Java™ Runtime Environments

Table 1.2 lists the recommended browsers for running Storage Management Appliance software v2.1 and HP Command View EVA v3.3.

Note

You should update your Internet browser version on your remote computers **after** you have upgraded to Storage Management Appliance software v2.1 and HP Command View EVA v3.3.

If you use browser and JRE versions that are not listed in [Table 1.2](#), the Storage Management Appliance software v2.1 and HP Command View EVA v3.3 applications may not work correctly in your browser.

Table 1.2. Recommended Browsers and JREs

Operating System	Internet Browser	Java Runtime Environment (JRE)
HP-UX PA-RISC 11.11/11iv1 (64-bit)	Mozilla 1.6	HP's JRE 1.4.2_05+ (64 bit), PA-RISC RTE
HP-UX 11.23 PI (IA64)	Mozilla 1.6	HP's JRE 1.4.2_05+ (64 bit)
IBM AIX 5.2, 5.3	Mozilla 1.4.2	JRE 1.4.2_02+
Open VMS 7.3-1, 7.3-2, 8.2	Mozilla 1.5	JRE 1.4.2_02+
Redhat Advanced Server 2.1, 3.0 (32 bit)	Mozilla 1.6	JRE 1.4.2_02+ (32 bit), RPM Format
Redhat Advanced Server 2.1, 3.0 (64 bit)	Mozilla 1.7	JRE 1.4.2_02+ (64 bit)
Sun Solaris™8, 9	Mozilla 1.4.1	JRE 1.4.2_02+ (64 bit)
Tru64 5.1a, 5.1b	Mozilla 1.6	JRE 1.4.2_02+
United Linux 1.0/SUSE 8 (32 and 64 bit)	Mozilla 1.6	JRE 1.4.2_02+
Windows® 2000 Advanced Server, SP4 (32 bit)	Internet Explorer 6.0 SP1	JRE 1.4.2_02+
Windows Server 2003 Enterprise Edition, SP1 (32-bit) and Windows 2003 Enterprise Edition (64 bit)	Internet Explorer 6.0 SP1	JRE 1.4.2_02+
Windows 2000 Professional	Internet Explorer 6.0 SP1	JRE 1.4.2_02+

Operating System	Internet Browser	Java Runtime Environment (JRE)
Windows 2003 Datacenter Edition	Internet Explorer 6.0 SP1	JRE 1.4.2_02+
Windows XP Professional	Internet Explorer 6.0 SP1	JRE 1.4.2_02+

Required licenses

Depending on the functionality you require and your Enterprise Virtual Array type, HP Command View EVA v3.3 might require the following licenses:

- HP StorageWorks Business Copy EVA5000 v2.3
- HP StorageWorks Business Copy EVA3000 v2.3
- HP StorageWorks Continuous Access EVA5000 v1.2
- HP StorageWorks Continuous Access EVA3000 v1.2

See [Table 2.4](#) for more information about element manager software and add-on license compatibility.

If you intend to use either HP Business Copy EVA v2.3 or HP Continuous Access EVA v1.2 after you have upgraded to HP Command View EVA v3.3, you must obtain the appropriate licenses. You must obtain the appropriate licenses before you begin the upgrade procedure described in [Chapter 3: Upgrading the Enterprise Virtual Array](#).

See the *HP StorageWorks Business Copy EVA License Instructions* and the *HP StorageWorks Continuous Access EVA V1.2 Getting Started Guide* for more information about obtaining licenses for HP Business Copy EVA v2.3 and HP Continuous Access EVA v1.2, respectively.

Note

Redeeming licenses can take between 1 and 48 hours. Please plan accordingly.

SMI-S EVA prerequisites

The following are prerequisites for installing SMI-S EVA v3.3:

- HP Command View EVA 3.3 release must be installed prior to SMI-S EVA installation.
- No Service Location Protocol (SLP) versions should be installed or running in port 427 prior to installing SMI-S EVA. Upon installation of SMI-S EVA, SLP is installed as a service. SLP service is uninstalled when SMI-S EVA is uninstalled.
- Previous versions of SMI-S EVA should be uninstalled before installing SMI-S EVA v3.3.
- SMI-S EVA v3.3 is supported on Windows® 2000 SP3 or above.

Antivirus software

After you upgrade to Storage Management Appliance software v2.1, you can install an antivirus application. HP supports the use of the following antivirus programs:

- Symantec Norton AntiVirus™ v7.6, v8.0, v8.1, and v9.0—Corporate Edition
- McAfee® NetShield® v4.5
- McAfee® VirusScan™ Enterprise v7.0, v7.1, and v8.0i
- Trend Micro™ ServerProtect™ v5.31, v 5.5, v5.56, and 5.58
- eTrust™ InoculateIT™ v6.0

Please refer to *OpenView HP Storage Management Appliance Software Using AntiVirus Software Application Notes*. This document provides instructions for using current versions of the above antivirus applications.

Reference documentation

[Table 1.3](#) lists the documents to which you might refer during the upgrade and downgrade processes. The listed URL is the best place to obtain the latest version of each document.

Table 1.3. Reference Documents

Title	Location
<i>HP StorageWorks Continuous Access EVA V1.1 Getting Started Guide</i>	http://h20000.www2.hp.com/bizsupport/TechSupport/DocumentIndex.jsp . Then click manuals (guides, supplements, addendums, etc.)
<i>HP StorageWorks Continuous Access User Interface V1.1a Installation Guide</i>	http://h20000.www2.hp.com/bizsupport/TechSupport/DocumentIndex.jsp . Then click manuals (guides, supplements, addendums, etc.)
<i>HP OpenView Storage Area Manager 3.2 Installation Guide</i>	http://ovweb.external.hp.com/ovnsmdps/pdf/t2533-90001.pdf
<i>HP OpenView Storage Area Manager EVA Device Plug-In Installation Instructions</i>	http://openview.hp.com/products/dpi/install_guides/HP_HSVdpi_03_00_E.pdf
<i>HP OpenView Storage Management Appliance Software Update Installation Card</i>	http://h18006.www1.hp.com/products/sanworks/managementappliance/documentation.html
<i>HP OpenView Storage Management Appliance Software Using AntiVirus Software Application Notes</i>	http://h18006.www1.hp.com/products/sanworks/managementappliance/documentation.html
<i>HP StorageWorks Business Copy EVA License Instructions</i>	Available in the HP Business Copy EVA license kits.
<i>HP StorageWorks Business Copy EVA/MA/EMA 2.3 Host Agent for HP OpenVMS Installation Guide</i>	http://h18006.www1.hp.com/products/storage/software/bizcopyeva/index.html . Then, click Technical documentation .
<i>HP StorageWorks Business Copy EVA/MA/EMA 2.3 Host Agent for HP Tru64 UNIX Installation Guide</i>	http://h18006.www1.hp.com/products/storage/software/bizcopyeva/index.html . Then, click Technical documentation .
<i>HP StorageWorks Business Copy EVA/MA/EMA 2.3 Host Agent for HP-UX Installation Guide</i>	http://h18006.www1.hp.com/products/storage/software/bizcopyeva/index.html Then, click Technical documentation .

Title	Location
<i>HP StorageWorks Business Copy EVA/MA/EMA 2.3 Host Agent for IBM AIX Installation Guide</i>	http://h18006.www1.hp.com/products/storage/software/bizcopyeva/index.html Then, click Technical documentation .
<i>HP StorageWorks Business Copy EVA/MA/EMA 2.3 Host Agent for Sun Solaris Installation Guide</i>	http://h18006.www1.hp.com/products/storage/software/bizcopyeva/index.html Then, click Technical documentation .
<i>HP StorageWorks Business Copy EVA/MA/EMA 2.3 Host Agent for Windows Installation Guide</i>	http://h18006.www1.hp.com/products/storage/software/bizcopyeva/index.html Then, click Technical documentation .
<i>HP StorageWorks Business Copy EVA/MA/EMA 2.3 Server Installation Guide</i>	http://h18006.www1.hp.com/products/storage/software/bizcopyeva/index.html Then, click Technical documentation .
<i>HP StorageWorks Business Copy EVA/MA/EMA 2.3 Using BC with Continuous Access EVA and Data Replication Manager Application Notes</i>	http://h18006.www1.hp.com/products/storage/software/bizcopyeva/index.html Then, click Technical documentation .
Host Server Documentation	
<i>HP StorageWorks HP-UX connectivity for the EVA3000/EVA5000 Enterprise Virtual Array Installation and Reference Guide</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks HP-UX connectivity 3.0G for the EVA3000/EVA5000 Enterprise Virtual Array Release Notes</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks IBM AIX connectivity for the EVA3000/EVA5000 Enterprise Virtual Array Installation and Reference Guide</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks IBM AIX connectivity 3.0G for the EVA3000/EVA5000 Enterprise Virtual Array Release Notes</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks Linux connectivity for the EVA3000/EVA5000 Enterprise Virtual Array Installation and Reference Guide</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks Linux connectivity 3.0G for the EVA3000/EVA5000 Enterprise Virtual Array Release Notes</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks Novell NetWare connectivity for the EVA3000/EVA5000 Enterprise Virtual Array Installation and Reference Guide</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html

Title	Location
<i>HP StorageWorks Novell NetWare connectivity 3.0G for the EVA3000/EVA5000 Enterprise Virtual Array Release Notes</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks OpenVMS connectivity for the EVA3000/EVA5000 Enterprise Virtual Array Installation and Reference Guide</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks OpenVMS connectivity 3.0G for the EVA3000/EVA5000 Enterprise Virtual Array Release Notes</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks Sun Solaris connectivity 3.0G for the EVA3000/EVA5000 Enterprise Virtual Array Installation and Reference Guide</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks Sun Solaris connectivity 3.0G for the EVA3000/EVA5000 Enterprise Virtual Array Release Notes</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks Tru64 Unix connectivity for the EVA3000/EVA5000 Enterprise Virtual Array Installation and Reference Guide</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks Tru64 Unix connectivity 3.0G for the EVA3000/EVA5000 Enterprise Virtual Array Release Notes</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks Windows connectivity for the EVA3000/EVA5000 Enterprise Virtual Array Installation and Reference Guide</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html
<i>HP StorageWorks Windows connectivity 3.0G for the EVA3000/EVA5000 Enterprise Virtual Array Release Notes</i>	http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html

Chapter 2. Software Compatibility Matrices

The Enterprise Virtual Array uses various software that work with each other to manage the storage solution. When you are considering an upgrade, it is important to ensure that all of the software and firmware versions are compatible.

This section provides tables that summarize which versions of software are compatible with each other. Use [Table 2.1](#), [Table 2.2](#), [Table 2.3](#), and [Table 2.4](#) to ensure that you are using compatible software versions.

Note

Use [Appendix B: Software Version Worksheet](#) to collect important version information as you read through this manual and perform the procedures.

The HP StorageWorks Command View EVA v3.3 software is compatible with the following:

Software

- HP StorageWorks Virtual Controller Software (VCS) v3.025 (recommended version)
- HP OpenView Storage Management Appliance software v2.1 (required)

Hardware

- HP OpenView Storage Management Appliance I, II, or III or the general purpose storage management server.
- HSV110 controller (EVA5000)
- HSV100 controller (EVA3000)

Note

Refer to the release notes for the host operating system to determine which version of HP StorageWorks Secure Path (and service packs) you should use. (See [Table 1.3](#) for a list of host server documents.)

Table 2.1 indicates the compatible versions of element manager software and storage system software. HP Command View EVA v3.3 is compatible with several versions of VCS; however, the recommended VCS version is VCS v3.025. If you are running a version of VCS that is not listed in this table (for instance, VCS v1.01), you should upgrade to a later version of VCS.



Caution

After you have upgraded a storage system to v3.020 (or later), you should not downgrade the initialized storage system to v2.xxx. If you attempt to downgrade an initialized storage system, you will lose any configuration information or data in that storage system. All existing data will be destroyed when you downgrade from v3.xxx to v2.00x.

See Table 3.4 for a description of the proper storage system software upgrade paths.

Table 2.1. Compatibility Matrix

Storage System Software Version	HSV Element Manager v2.0a	HP Command View EVA v2.1	HP Command View EVA v3.0	HP Command View EVA v3.0a	HP Command View EVA v3.1	HP Command View EVA v3.2 and v3.3
VCS v2.006	No	Yes	Yes	Yes	No	No
VCS v3.000	No	No	Yes ^b	Yes ^b	Yes ^b	No
VCS v3.001	No	No	Yes	Yes	Yes	No
VCS v3.010	No	No	No ^c	No ^c	Yes	Yes
VCS v3.014	No	No	No	No	Yes	Yes
VCS v3.020	No	No	No	No	No	Yes
VCS v3.025	No	No	No	No	No	Yes
abc						

^aVCS v2.004 is compatible only with EVA3000.

^bVCS v3.000 cannot be used on an EVA3000 system.

^cWhile HP Command View EVA v3.0 and v3.0a can manage controllers running VCS v3.010, you will not have access to any v3.010-specific features. HP requires that you upgrade to HP Command View EVA v3.1.

[Table 2.2](#) indicates the compatible versions of VCS and Enterprise Virtual Array. The EVA3000 storage system uses the HSV100 controller, and the EVA5000 storage system uses the HSV110 controller.

Table 2.2. Enterprise Virtual Array Type and VCS Compatibility

	EVA3000	EVA5000
VCS v2.002	No	Yes
VCS v2.003	No	Yes
VCS v2.004	Yes	No
VCS v2.005	Yes	Yes
VCS v2.006	Yes	Yes
VCS v3.000	No	Yes
VCS v3.001	No	Yes
VCS v3.010	Yes	Yes
VCS v3.014	Yes	Yes
VCS v3.020	Yes	Yes
VCS v3.025	Yes	Yes

[Table 2.3](#) indicates the compatible versions of element manager software and Storage Management Appliance software. HP Command View EVA v3.3 is compatible with the Storage Management Appliance software v2.1. If you are running Storage Management Appliance software v1.0c or Storage Management Appliance software v2.0, you must upgrade the Storage Management Appliance software to v2.1.

See [Step 3: Upgrading the Storage Management Appliance or the general purpose storage management server](#) for a description of the proper upgrade paths.

Table 2.3. Element Manager Software and Storage Management Appliance Software Compatibility

Storage Management Appliance Software	HSV Element Manager v2.0a	HP Command View EVA v2.1	HP Command View EVA v3.0	HP Command View EVA v3.0a	HP Command View EVA v3.1, v3.2	HP Command View EVA v3.3
v1.0C	Yes	No	No	No	No	No
v2.0	Yes	Yes *requires Service Pack 1a.	Yes *requires Service Pack 3.	Yes *requires Service Pack 4	No	No
v2.1	No	No	No	Yes	Yes	Yes

Table 2.4 indicates the compatible versions of the element manager software and add-on licenses such as HP Business Copy EVA and HP Continuous Access EVA. HP Business Copy EVA and HP Continuous Access EVA add data management functionality.

Table 2.4. Element Manager Software and Add-on Licenses Compatibility

	HP Command View EVA v2.1	HP Command View EVA v3.0	HP Command View EVA v3.0a	HP Command View EVA v3.1, v3.2	HP Command View EVA v3.3
HP Business Copy EVA 2.3	Yes	Yes	Yes	Yes	Yes
HP Business Copy eva5000 v2.1a	Yes	Yes	No	No	No
HP Business Copy eva5000 v2.2	No	Yes ^a	Yes ^a	Yes ^a	Yes ^a
HP Business Copy eva3000 v2.1	Yes	No	No	No	No
HP Business Copy eva3000 v2.1a	No	Yes	No	No	No
HP Business Copy eva3000 v2.2	No	No	Yes	Yes	Yes
HP Continuous Access eva5000 v1.0	No	Yes	Yes	No	No
HP Continuous Access eva5000 v1.1	No	No	No	Yes	Yes
HP Continuous Access eva3000 v1.1	No	No	No	Yes	Yes
HP Continuous Access EVA 1.2	No	No	No	Yes	Yes
a					

^aHP Business Copy eva5000 v2.3 is compatible only with VCS v2.003, VCS v2.005, VCS v3.000, VCS v3.010, VCS v3.020, and VCS v3.025.

Chapter 3. Upgrading the Enterprise Virtual Array

Upgrading from Enterprise Virtual Array involves several steps that must be done in the prescribed order. If you do not perform the upgrade process in the appropriate order, you may not be able to manage the Enterprise Virtual Array storage system using HP Command View EVA.

Note

Refer to [Appendix A: Software Upgrade Flowchart](#) for a graphical overview of the upgrade process. Use [Appendix B: Software Version Worksheet](#) to collect important version information as you read through this manual and perform the procedures.

HP highly recommends that you perform this [upgrade](#) procedure during off-peak hours. The upgrade process may cause a fully configured HSV controller to exceed application-specific timeout values. During the VCS upgrade, both HSV controllers reboot at the same time.

Note

Before you can perform an online upgrade to VCS v3.025, you must be running VCS v3.00 (or later) on the HSV controllers without HP Continuous Access installed or VCS 3.010 (or later) if HP Continuous Access is installed. Contact your HP Authorized Service Representative for assistance in upgrading to VCS 3.025 from any version prior to 3.020.

The upgrade procedure contains the following steps:

- Step 1: Checking the health of the Enterprise Virtual Array
- Step 2: Redeeming license keys
- Step 3: Upgrading the Storage Management Appliance or the general purpose storage management server
- Step 4: Upgrading host servers
- Step 5: Clearing the passwords on the HSV controllers
- Step 6: Upgrading HP Command View EVA
- Step 7: Loading the add-on licenses
- Step 8: Upgrading the VCS/Storage System Software to v3.025

**Caution**

After you have upgraded a storage system to v3.020 (or later), you should not downgrade the initialized storage system to v2.xxx. If you attempt to downgrade an initialized storage system, you will lose any configuration information or data in that storage system. All existing data will be destroyed when you downgrade from v3.xxx to v2.00x.

- Step 9: Adding passwords to the HSV controllers (optional)
- Step 10: Installing SMI-S EVA (optional)
- Step 11: Upgrading HP Business Copy EVA (if installed)
- Step 12: Upgrading HP Continuous Access EVA (if installed)
- Step 13: Migrating Network View to Storage Area Manager
- Step 14: Installing Storage Node Manager (optional)
- Step 15: Disabling SNMP notification to the PRS host

Step 1: Checking the health of the Enterprise Virtual Array

Estimated time to complete

1 hour

Before you upgrade your Enterprise Virtual Array to v3.025, you should check the condition of your storage system. Perform the following steps to determine if your Enterprise Virtual Array is in good condition and ready to upgrade.

1. Check the displays and status indicators on the Enterprise Virtual Array. (Refer to *HP StorageWorks Enterprise Virtual Array User Guide* for information and illustrations related to displays and status indicators.)

Note

If you are performing the upgrade process remotely, you do not have to do this step. However, it is very important that you check the state of your hardware elements. You can do this remotely through HP Command View EVA. See step 2 for more information.

- a. Verify that the Operator Control Panels (OCPs) on the HSV controllers are properly displaying the WWNs and storage system names.
- b. Verify that there are no fault status indicators on the drive enclosures.
- c. Verify that the Power status indicators are on and the Activity status indicators are flashing on the disk drives.
- d. Verify that there are no errors on the Environmental Monitoring Unit (EMU) displays.
- e. Verify that each I/O module is displaying two green status indicators (viewed from rear).

Note

If your Enterprise Virtual Array does not use FC loop switches, verify that there are three green status indicators.

- f. Verify that the power supplies and blowers are operating correctly.
 - g. Check the back of each HSV controller. Verify that all of the status indicators are green and not blinking.
2. Launch HP Command View EVA and click the icon of the storage system you want to upgrade. Check for hardware errors.
 - a. Look at the Hardware folder in the Navigation pane. If there are any hardware caution or warning conditions, HP Command View EVA displays the appropriate icon over the folder.

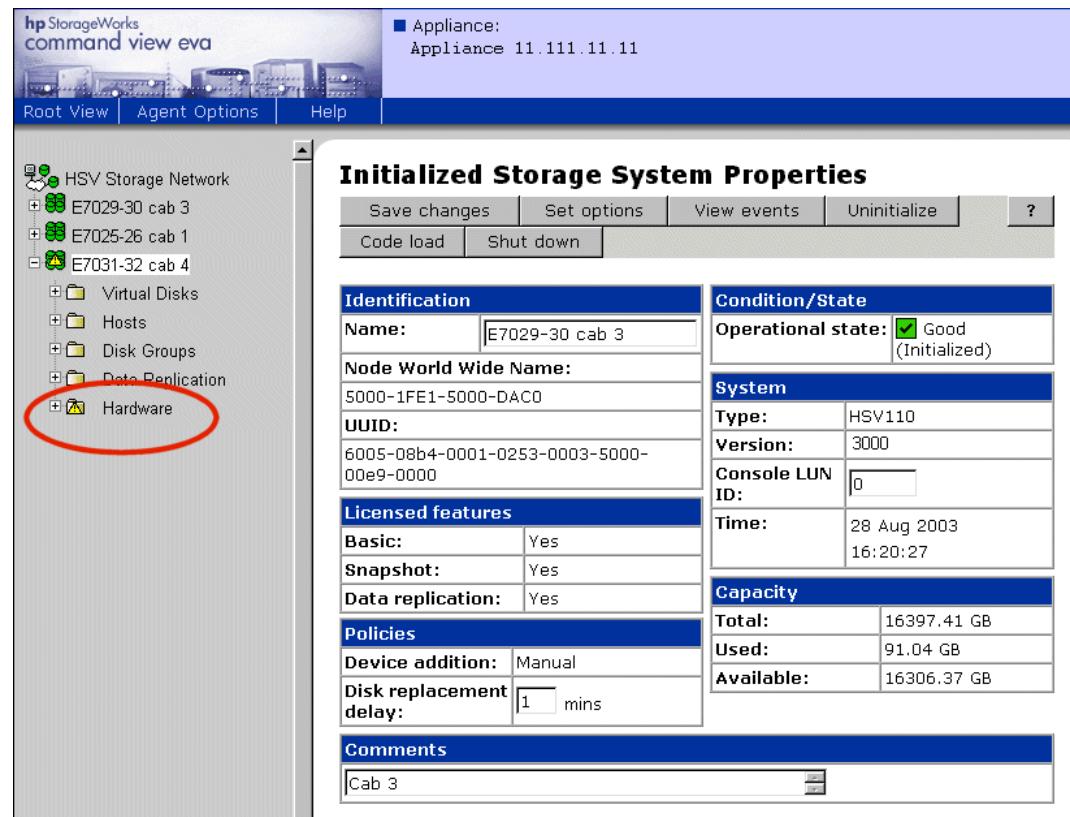


Figure 3.1. HP Command View EVA—Hardware folder in the Navigation pane

- b. Click the Hardware folder to expand the navigation tree. The Hardware Folder Properties page displays. The **Operational State** field also indicates if there is a hardware problem.

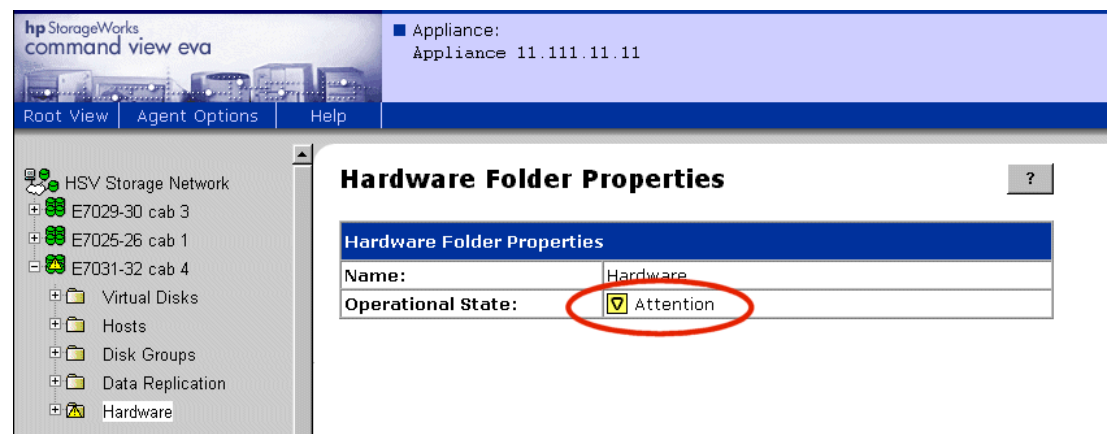


Figure 3.2. HP Command View EVA—Hardware Folder Properties page

- c. Continue to expand the navigation tree under the Hardware folder, until you see a hardware component icon with an attention or warning icon on it.

- d. Click the component icon to display the properties page. The **Operational state** field indicates if there is a hardware error.

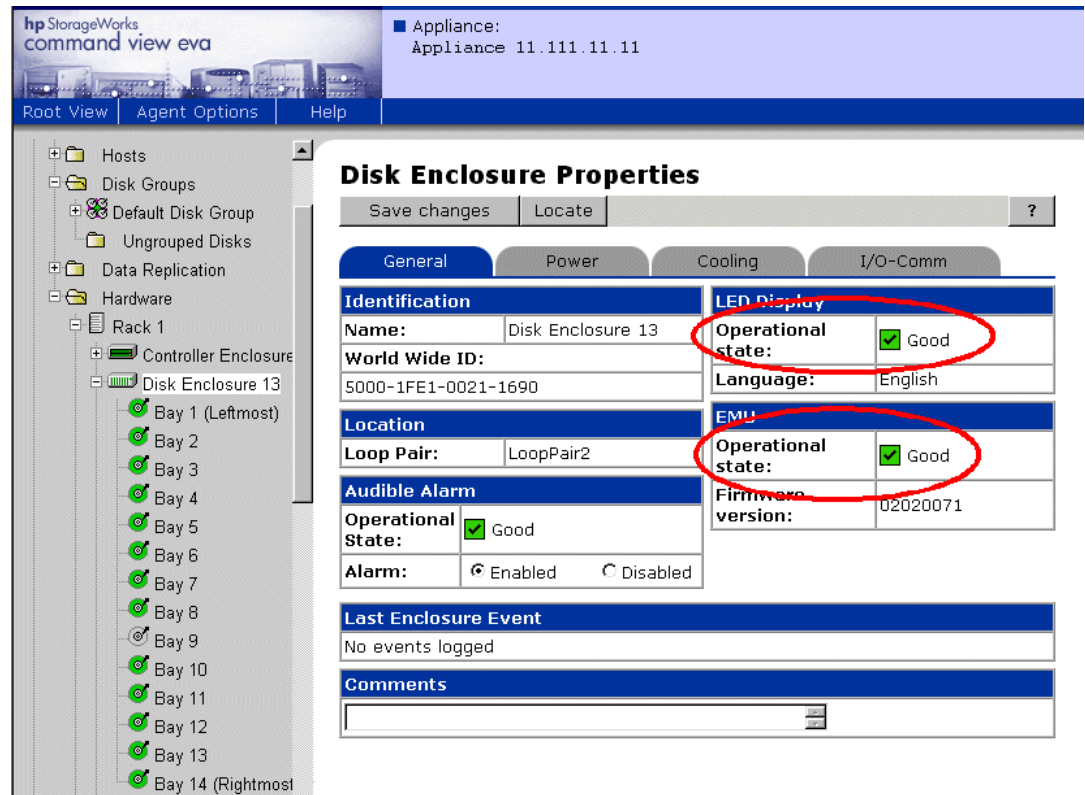


Figure 3.3. HP Command View EVA—Disk Enclosure Properties page—checking operational states

3. Record the Environmental Monitoring Unit (EMU) firmware version.
 - a. Click the storage system icon in the Navigation pane. The Initialized Storage System page displays.
 - b. Click the Hardware folder in the Navigation pane. The Hardware Folder Properties page displays.
 - c. Expand the navigation tree under the Rack icon.
 - d. Click the Disk Enclosure icon in the Navigation pane. The Disk Enclosure Properties page displays.

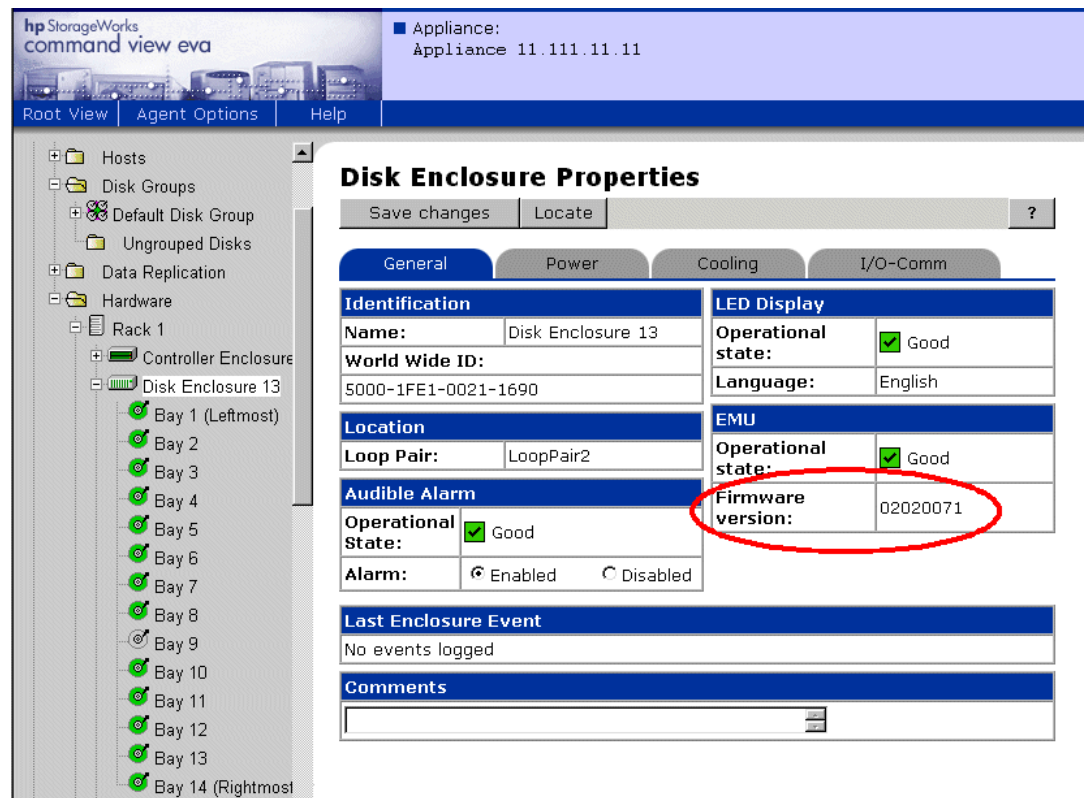


Figure 3.4. HP Command View EVA—Disk Enclosure Properties page—checking the firmware version

- e. In the EMU group, record the number listed in the **Firmware version** field.
 - f. Repeat step d and step e for each disk enclosure in the rack. If there is more than one rack in the storage system, record the firmware version for each disk enclosure in the storage system.
4. Verify that there are no hardware components in the Unmappable Hardware folder.
 - a. Expand the navigation tree under the Hardware folder in the Navigation pane.
 - b. Click the Unmappable Hardware folder.
 Hardware components can be placed in the Unmappable Hardware folder for several reasons. For example, hardware components can be placed in the Unmappable Hardware folder, when the I/O modules on a disk enclosure are not working, the controllers restart, or there is a hardware failure. If there are any hardware components listed under this folder, determine why they are listed there and fix the problems.
 5. Using HP Command View EVA, examine the controller event log. Verify that no Critical events occurred in the last 48 hours.
 - a. Click a storage system icon in the Navigation pane.
 - b. Click **View Events**.
 The View Events page displays.

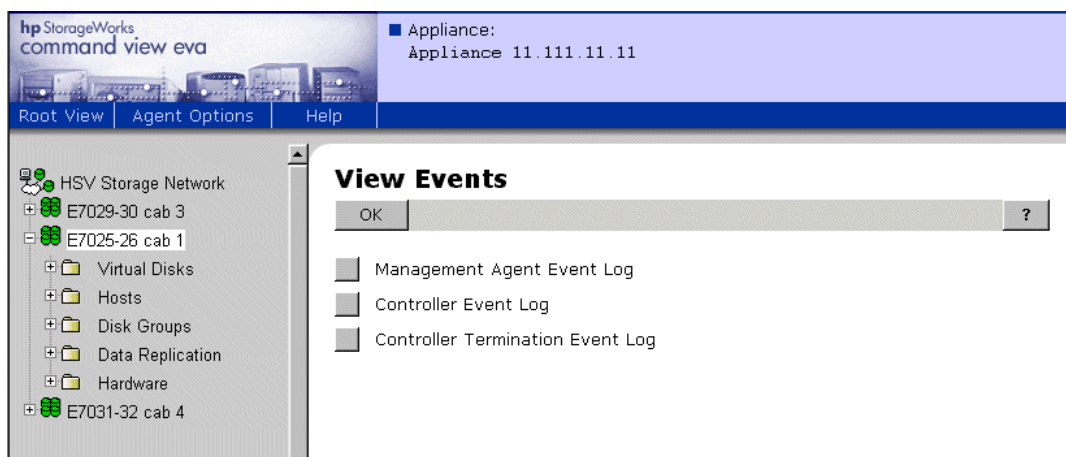


Figure 3.5. HP Command View EVA—View Events page

- c. Click **Controller Event Log**.
The Controller Events page displays in a new browser window.

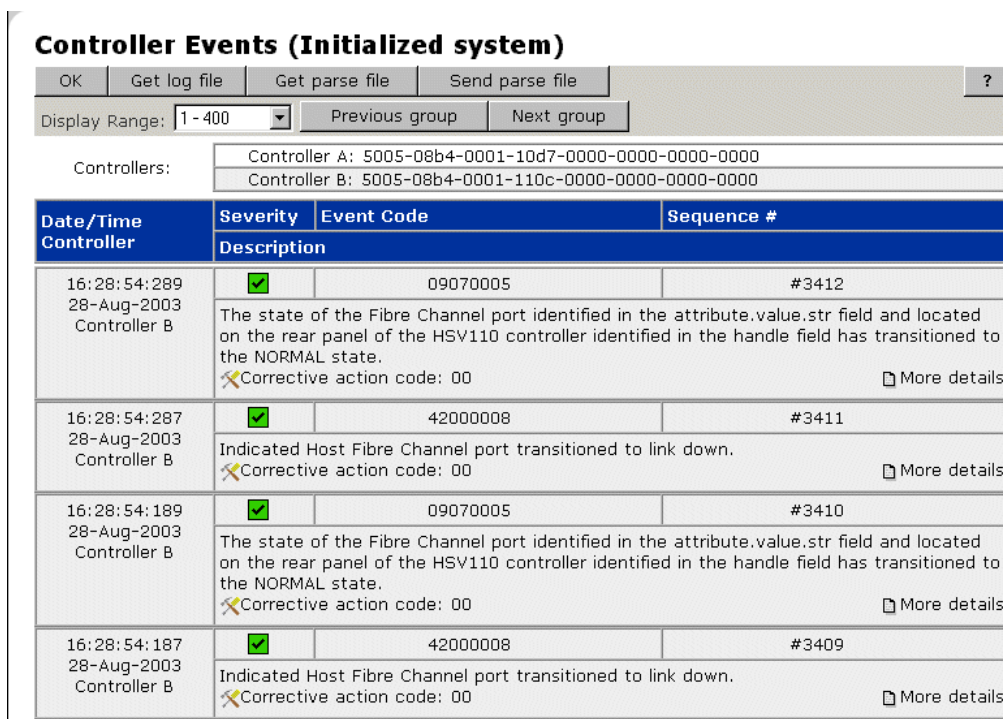


Figure 3.6. HP Command View EVA—Controller Events (Initialized system) page

- d. Verify that no unexpected Critical events have occurred in the past 48 hours.
- e. If Critical events have occurred in the past 48 hours, perform the steps outlined in the corrective action codes to correct the problems. In some cases, it might be necessary to call your HP authorized representative to fix the problem.
6. Verify that the hosts can see the Vdisks.
7. Verify that each disk group contains a minimum of eight disk drives.

- a. In HP Command View EVA, click the Disk Group folder in the Navigation pane. The Disk Group Folder Properties page displays.
- b. Click a disk group icon. The Disk Group Properties page displays.
- c. Check the **Total disks** field in the Disk Group Properties page.

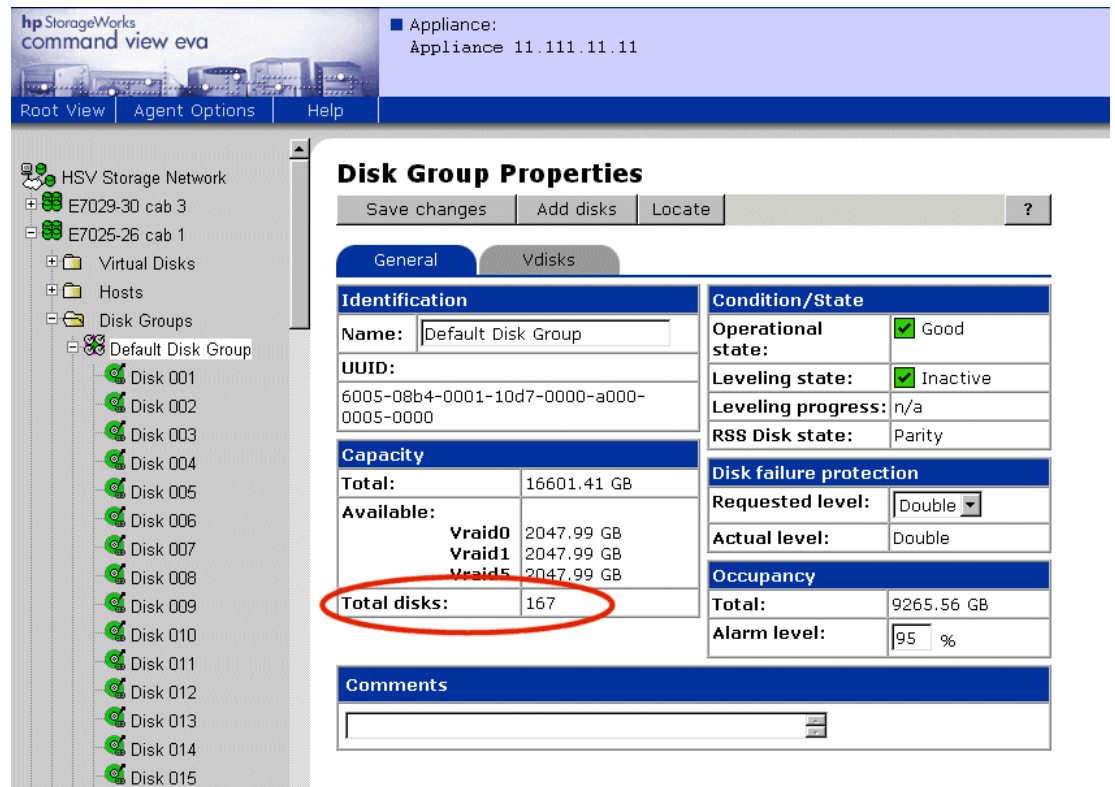


Figure 3.7. HP Command View EVA—Disk Group Properties page

- d. If each disk group does not contain a minimum of eight disk drives, correct your disk group configuration.
8. Verify that there is at least 5% free space below the capacity alarm setting in all disk groups.
 - a. In HP Command View EVA, click the Disk Group folder in the Navigation pane. The Disk Group Folder Properties page displays.
 - b. Click a disk group icon in the Navigation pane. The Disk Group Properties page displays.
 - c. Compare the **Capacity** to the **Occupancy** data in the Disk Group Properties page to determine how much free space there is in the disk group.

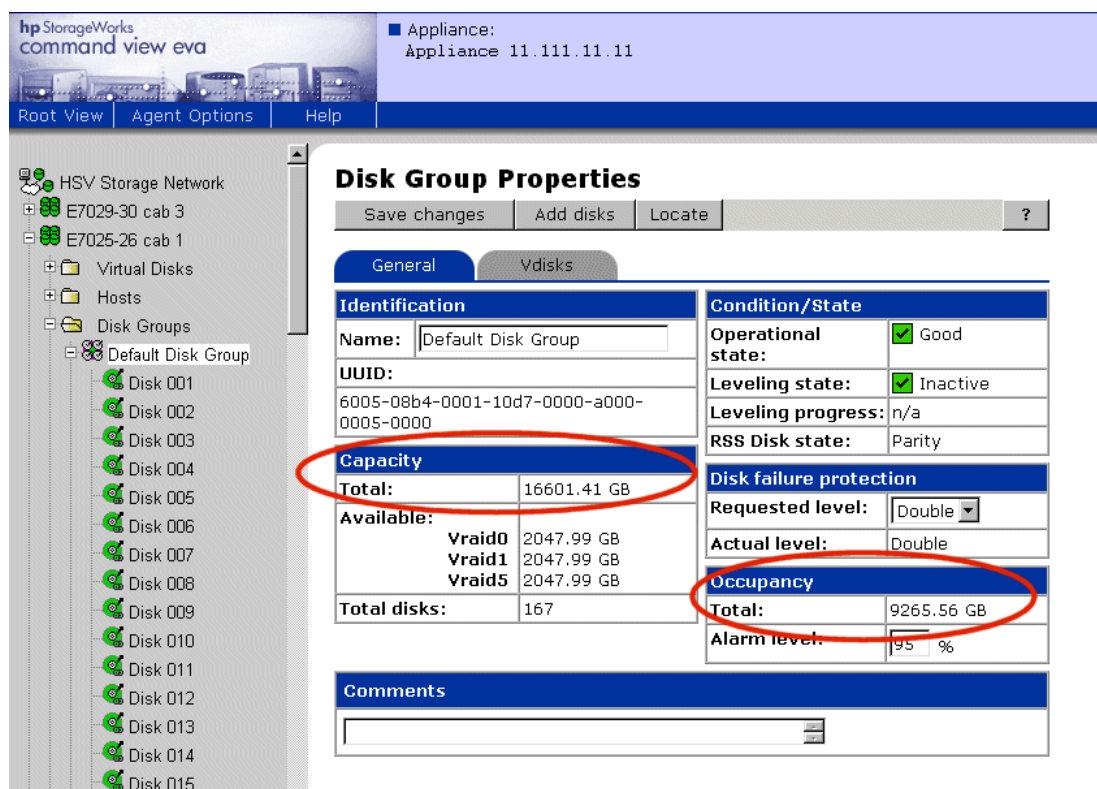


Figure 3.8. HP Command View EVA—Disk Group Properties page—checking free capacity

9. Check the Vraid levels for each Vdisk.
 - a. In HP Command View EVA, click the Virtual Disks folder in the Navigation pane. The Vdisk Folder Properties page displays.

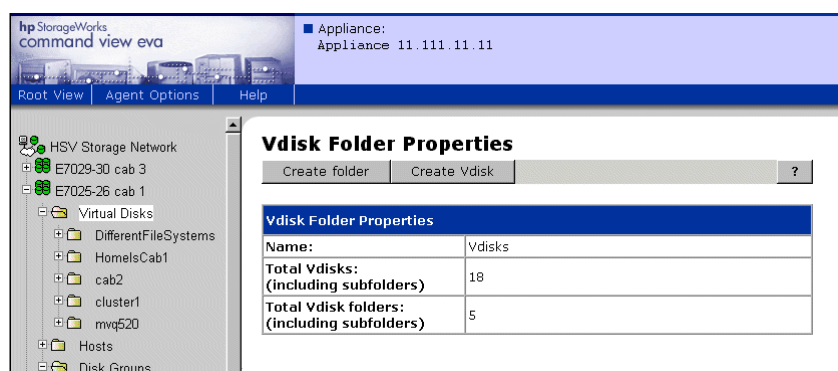


Figure 3.9. HP Command View EVA—Vdisk Folder Properties page

Note

If you are using virtual disk subfolders, expand the subfolders to view the Vdisk family icons.

- b. Click a Vdisk family icon.

The Vdisk Family Properties page displays.

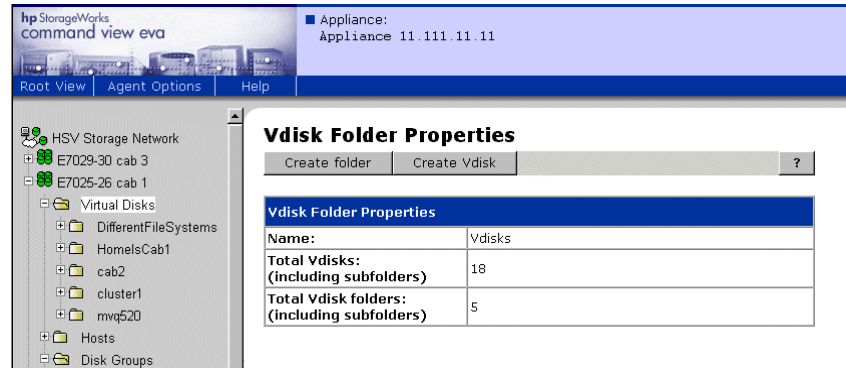


Figure 3.10. HP Command View EVA—Vdisk Family Properties page

- c. Click the ACTIVE icon.
The Vdisk Active Member Properties page displays.

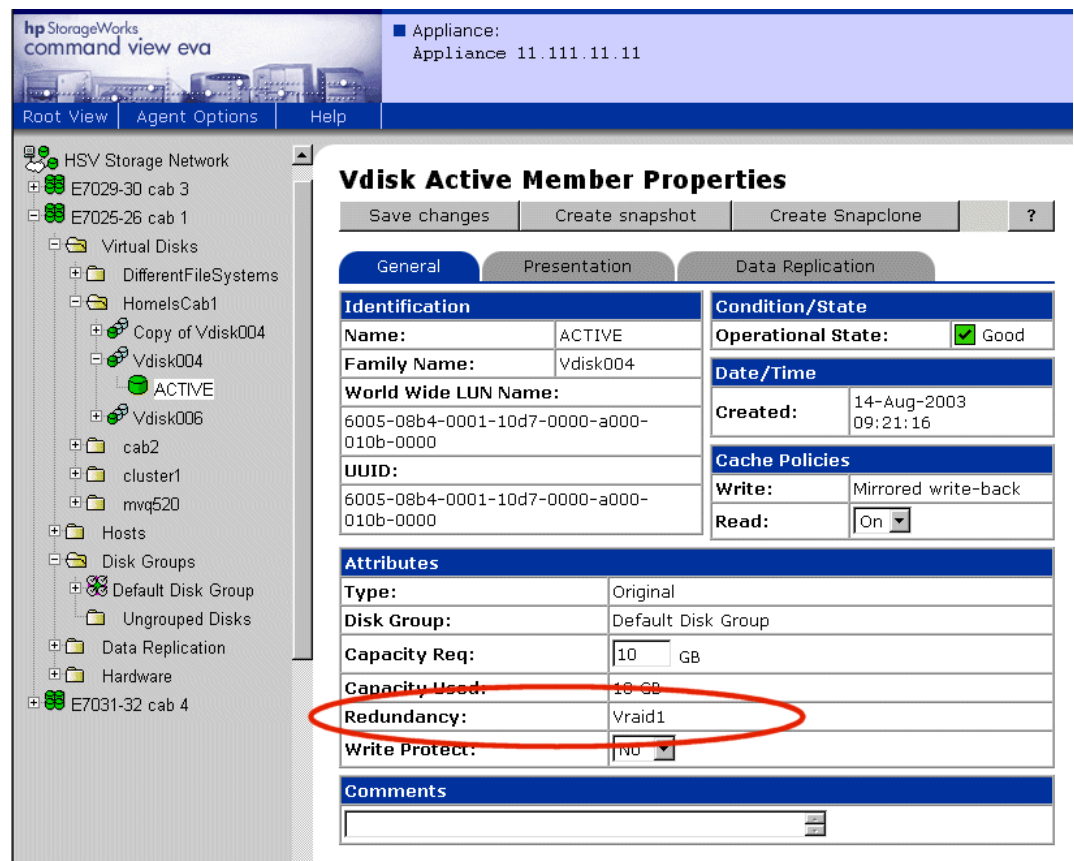


Figure 3.11. HP Command View EVA—Vdisk Active Member Properties page

- d. Check the **Redundancy** field.
If any Vdisks use Vraid0 protection, you might want to consider changing your Vdisk configuration. Vraid0 provides no data protection.

10. Verify that there are no configuration changes in progress. For instance, HP Command View EVA should not be in the process of creating a Vdisk.

If there are configuration changes in progress, wait 48 hours after configuration changes have been made before upgrading. Check the controller event log for unwanted events.

11. Back up the data in the Enterprise Virtual Array.



Caution

Always back up your data before performing major operations such as software upgrades.

Step 2: Redeeming license keys

Estimated time to complete

1 to 48 hours

Verify that you have the appropriate add-on licenses. See [Required kits](#) for more information.

Step 3: Upgrading the Storage Management Appliance or the general purpose storage management server

Estimated time to complete

1.5 to 2.5 hours

This section contains the following procedures:

- [Changing the default maximum log size](#)
- [Upgrading the Storage Management Appliance Software from v2.0 to v2.1](#)
- [Verifying the Storage Management Appliance Software version](#)

You must upgrade the Storage Management Appliance software to v2.1. Please use the Storage Management Appliance software v2.1 CD, and refer to the instructions in the *HP OpenView Storage Management Appliance Software Update Installation Card*, <ftp://ftp.compaq.com/pub/products/sanworks/techdoc/managementappliance/AV-RNE9K-TE.pdf>.

If the Storage Management Appliance is running Storage Management Appliance software v1.0C or later, you can upgrade to Storage Management Appliance software v2.1. You do not have to install any of the v2.0 service packs. Version 2.1 of the Storage Management Appliance software includes all of the necessary components. [Table 3.1](#) describes the proper upgrade paths to Storage Management Appliance software v2.1. These paths are applicable only if you are using the SMA.

Table 3.1. Storage Management Appliance Software Upgrade Paths

Current Storage Management Appliance Software Version	Upgrade Path
Storage Management Appliance software v1.0C	Upgrade directly to Storage Management Appliance software v2.1
Storage Management Appliance software v2.0	
Storage Management Appliance software v2.0, Service Pack 1a	
Storage Management Appliance software v2.0, Service Pack 3	
Storage Management Appliance software v2.0, Service Pack 4	

Note

To upgrade SMA from v1.0c to v2.1, refer to <ftp://ftp.compaq.com/pub/products/sanworks/techdoc/managementappliance/AV-RNE9K-TE.pdf>.

Changing the default maximum log size

The default maximum log file size for the Storage Management Appliance software v2.1 is 16 MB for the Event log and 8 MB for the Audit log. Previously in v2.0, the maximum log file size was 512 MB for both logs.



Caution

If you have Audit or Event log files that are larger than the new maximum sizes, and you want to retain them, back up the logs before you upgrade the Storage Management Appliance software from v2.0 to v2.1. The Storage Management Appliance software will delete the log files if they exceed the default maximum sizes.

Upgrading the Storage Management Appliance Software from v2.0 to v2.1

If you are running Storage Management Appliance software v1.0C, please refer to the instructions in the *HP OpenView Storage Management Appliance Software Update Installation Card*, <ftp://ftp.compaq.com/pub/products/sanworks/techdoc/managementappliance/AV-RNE9K-TE.pdf>.

If you are running Storage Management Appliance software v2.0 (or later), perform the following steps to upgrade to v2.1:



Caution

You cannot update the Storage Management Appliance software using a Terminal Services session. You must log in to the Storage Management Appliance software using a remote browser.

1. From a client computer, launch a Web browser and browse to the Storage Management Appliance, using the following format:

`http://<appliance_name>/`

Note

The default appliance name for a Storage Management Appliance (hardware version 1.0) begins with *swma* and includes the last 6 characters of the appliance serial number.

If the Storage Management Appliance software was restored using the Quick Restore CD v2.0, then the default appliance name begins with *sma* and includes all 12 characters of the appliance serial number.

The default appliance name for a Storage Management Appliance II begins with *sma* and includes all 12 characters of the appliance serial number.

The default appliance name for a Storage Management Appliance III begins with *sma* and includes all 10 characters of the appliance serial number.

The serial number is displayed on a sticker which is usually pasted to the lower right side of the appliance (when viewed from the front).

2. Log in to the Storage Management Appliance software using a valid username and password.

Note

You must have administrator privileges.

3. Insert the Storage Management Appliance software v2.1 Update CD-ROM in to the CD-ROM drive of the Storage Management Appliance.
4. Click **Settings** in the tool bar.

The Settings page displays.

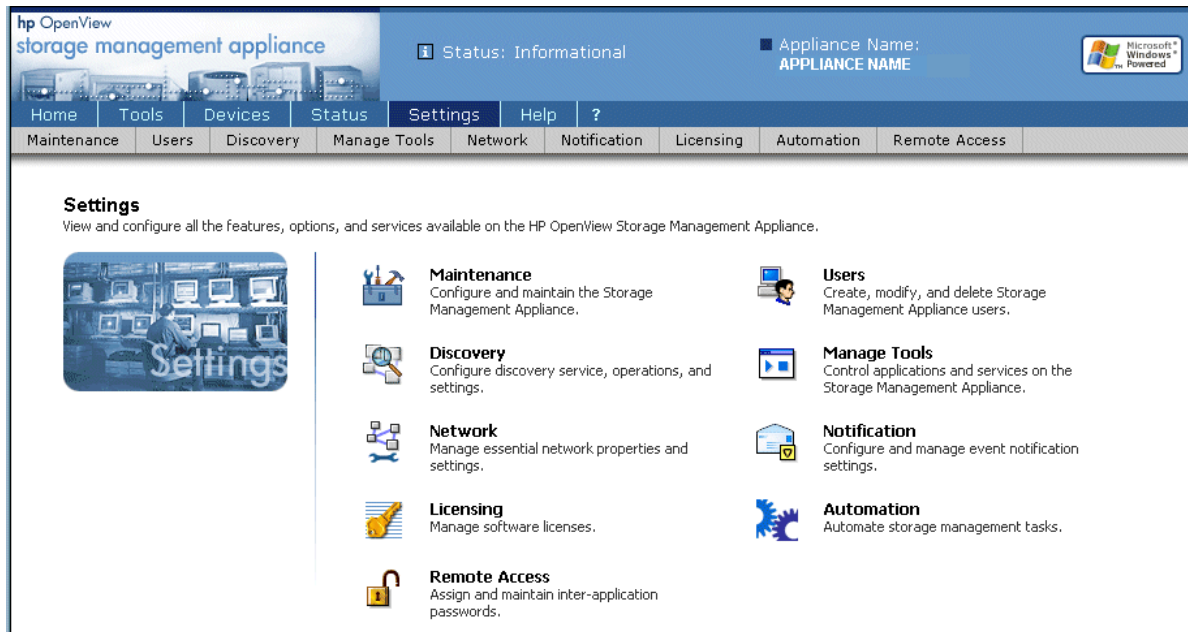


Figure 3.12. Storage Management Appliance software—Settings page

5. Click **Maintenance** in the tool bar.

The Maintenance page displays.

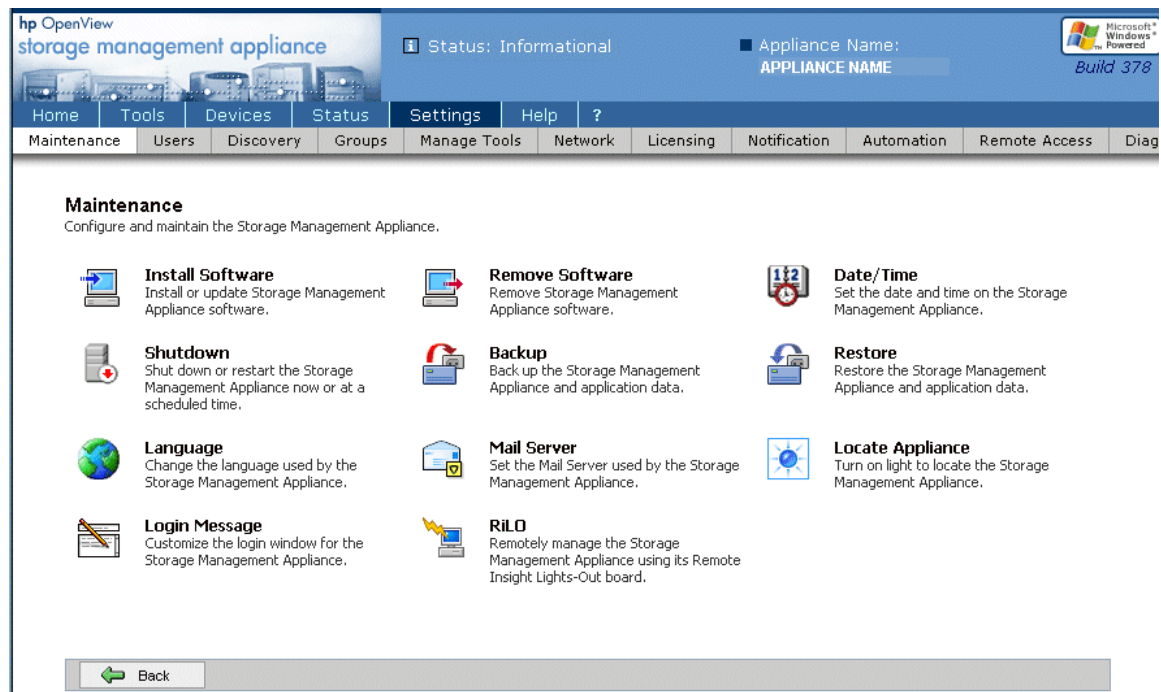


Figure 3.13. Storage Management Appliance software—Maintenance page

6. Click **Install Software**.

An Installation Wizard page displays.

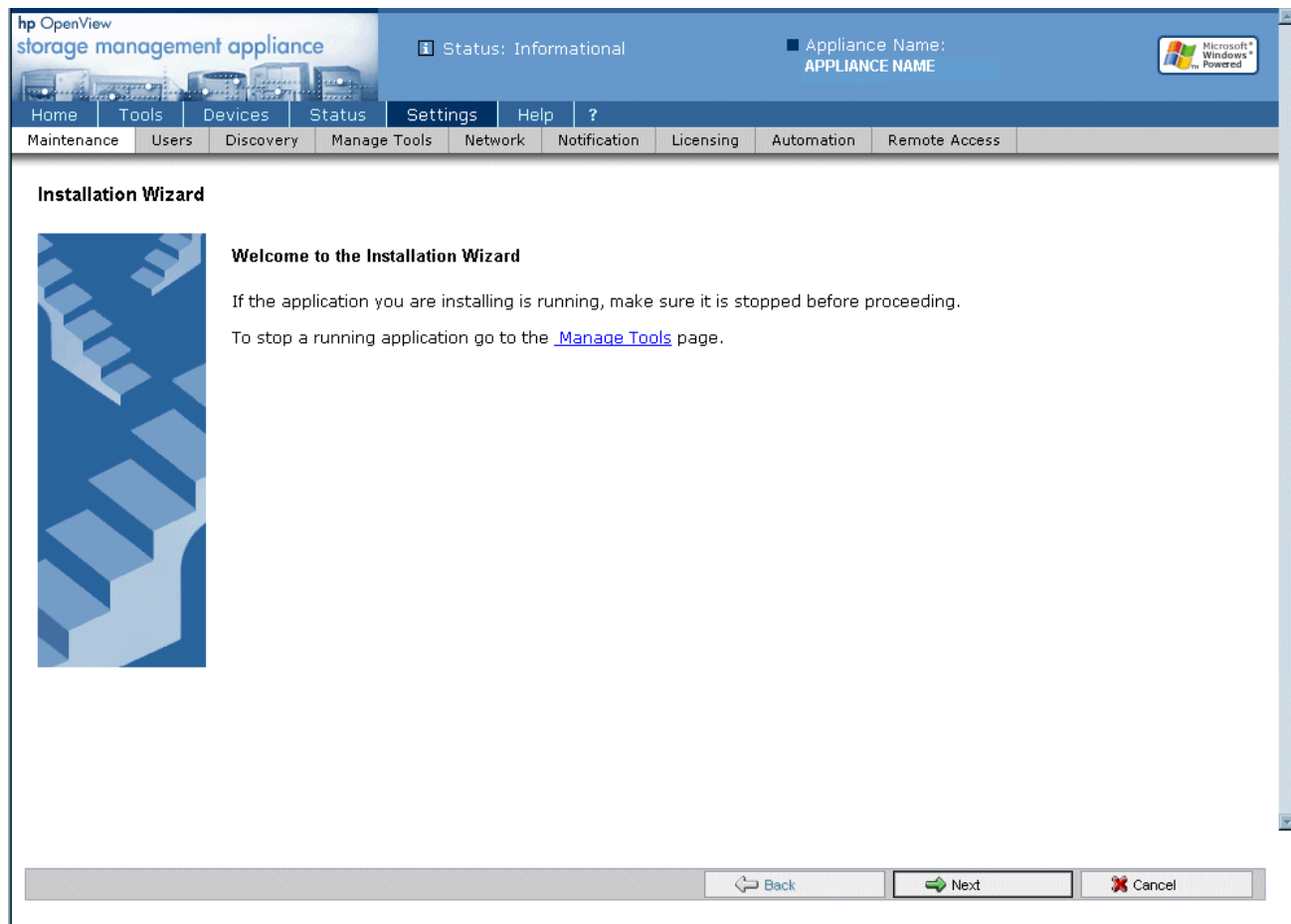


Figure 3.14. Storage Management Appliance software—Installation Wizard

7. Click **Next** at the bottom of the page.

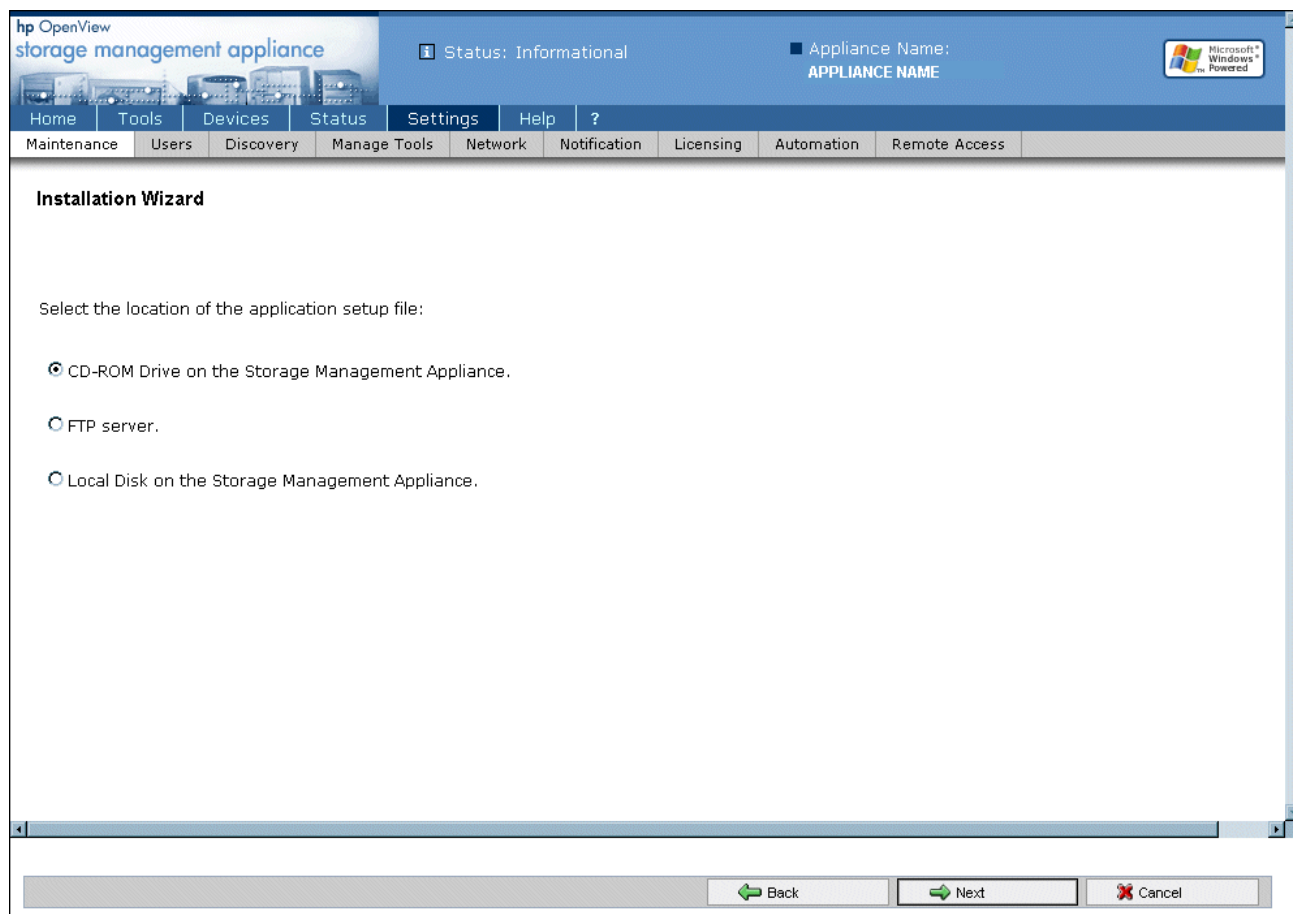


Figure 3.15. Storage Management Appliance software—Installation Wizard—installation types

8. Choose **CD-ROM Drive on the Storage Management Appliance**.

Note

The **FTP Server** and **Local Disk on the Storage Management Appliance** options cannot be used for upgrading from v2.0 to v2.1.

9. Click **Next** at the bottom of the page.
10. Verify that the appliance name and IP address are correct.
11. Click **Next** at the bottom of the page.
12. Select **Storage Management Appliance v2.1** from the drop-down list.
13. Click **Next** at the bottom of the page.

The installation process begins. A status bar displays.

Note

The installation process can last one hour. Wait until the installation completes before you perform any other actions in the Storage Management Appliance software.

When the installation finishes, the Storage Management Appliance reboots and the Storage Management Appliance software v2.1 starts up automatically.

Verifying the Storage Management Appliance Software version

1. From a client computer, launch a Web browser and browse to the Storage Management Appliance, using the following format:

```
http://<appliance_name>/
```

Note

The default appliance name for a Storage Management Appliance (hardware version 1.0) begins with *swma* and includes the last 6 characters of the appliance serial number.

If the Storage Management Appliance software was restored using the Quick Restore CD v2.0, then the default appliance name begins with *sma* and includes all 12 characters of the appliance serial number.

The default appliance name for a Storage Management Appliance II begins with *sma* and includes all 12 characters of the appliance serial number.

The default appliance name for a Storage Management Appliance III begins with *sma* and includes all 10 characters of the appliance serial number.

The serial number is displayed on a sticker which is usually pasted to the lower right side of the appliance (when viewed from the front).

2. Log in to the Storage Management Appliance software using a valid username and password.

Note

You must have administrator privileges.

3. Click **Help** in the tool bar.

The welcome page of online help for the Storage Management Appliance software displays the current version of the software.

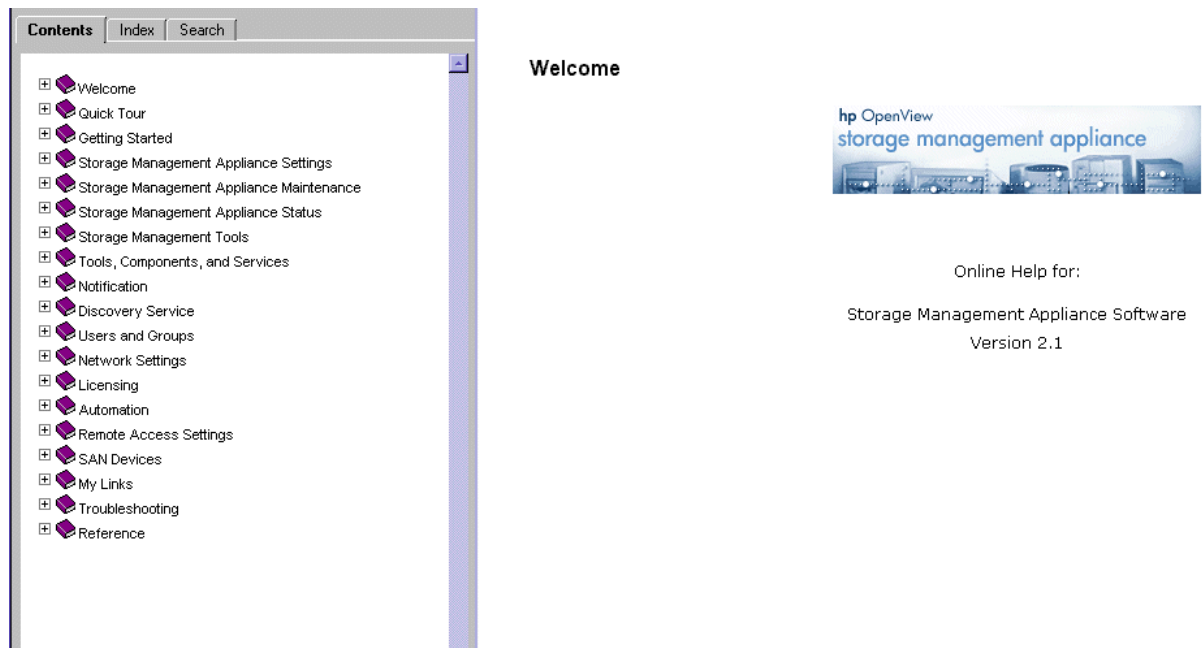


Figure 3.16. Storage Management Appliance Online Help

Step 4: Upgrading host servers

Estimated time to complete

varies by host type (see [Table 3.2](#))

After you have upgraded the Storage Management Appliance software, you can upgrade the platform kits on your host servers.

Please refer to the platform-specific installation documentation for detailed upgrade instructions. See [Table 1.3](#) for a list of host server documentation.

The Windows, Novell Netware, Linux, Sun Solaris, and IBM AIX host server kits contain FCA drivers, enabling scripts, utilities, Storage System Scripting Utility (SSSU), and documentation.

In the HP-UX, Tru64, and OpenVMS host server kits, the FCA drivers are embedded in the operating system. Therefore, the kits contain enabling scripts, utilities, SSSU, and documentation.

Note

Users of Windows NT 4.0 should be aware that VCS v3.025 incorporates a new Critical Resource Management function that may send Queue Full responses to SCSI commands before the maximum allowable Queue Depth of 2048 has been reached for a Fabric Port. Windows NT 4.0 does not properly handle these queue full responses and I/O errors may result.

The Critical Resource Management feature can be disabled by selecting a Custom Host Mode for Windows NT 4.0 hosts. Enter the value 00000004 1F80B8A8 into the Custom mode number field in the Add a Host page of HP Command View EVA.

Because disabling the Critical Resource Management feature affects the entire Enterprise Virtual Array, users connecting with Windows NT 4.0 and using this Custom Host Mode are strongly recommended to run homogeneous Windows NT 4.0 environments and not mix Windows NT 4.0 hosts with hosts running other operating systems on a given EVA subsystem.

Table 3.2. Time Estimates for Host Server Upgrades

Host OS	Estimated Time for Upgrade per host server
Windows	1 to 3 hours
Novell Netware	1 to 3 hours
Sun Solaris	15 minutes
Redhat Linux	15 minutes
IBM AIX	15 minutes
Tru64	30 minutes
OpenVMS	30 minutes
HP-UX	15 minutes

Step 5: Clearing the passwords on the HSV controllers

Estimated time to complete






2 minutes

If you are using passwords on your HSV controllers, you must clear the passwords, before you upgrade HP Command View EVA. You can add passwords to your storage system after you complete the HP Command View EVA upgrade (see [Step 9: Adding passwords to the HSV controllers \(optional\)](#)). Use the following procedure to clear the storage system passwords on the HSV controllers.

Note

When you clear a system password on the controller, you must disable password access from any HP Command View EVA with access to this storage system.


Using the Operator Control Panel (OCP) on the HSV Controller:

1. Press  to leave the default display.
2. Press  three times to scroll to System Password.
3. Press  to select System Password.
4. Press  to display Clear Password.
5. Press  to select Clear Password.

The OCP displays CLEAR PASSWORD? NO.

6. Press .

The OCP displays CLEAR PASSWORD? YES?

7. Press  to clear the password.

The password is cleared. The system automatically returns to the default display (WWID).

8. Disable password access to this storage system in HP Command View EVA.

Disabling password access in HP Command View EVA

Estimated time to complete

10 minutes

To disable password access to a storage system in HP Command View EVA, perform the following steps:

1. Launch HP Command View EVA in your browser.
2. Click **Agent Options** in the Session pane.

The Management Agent Options page displays.

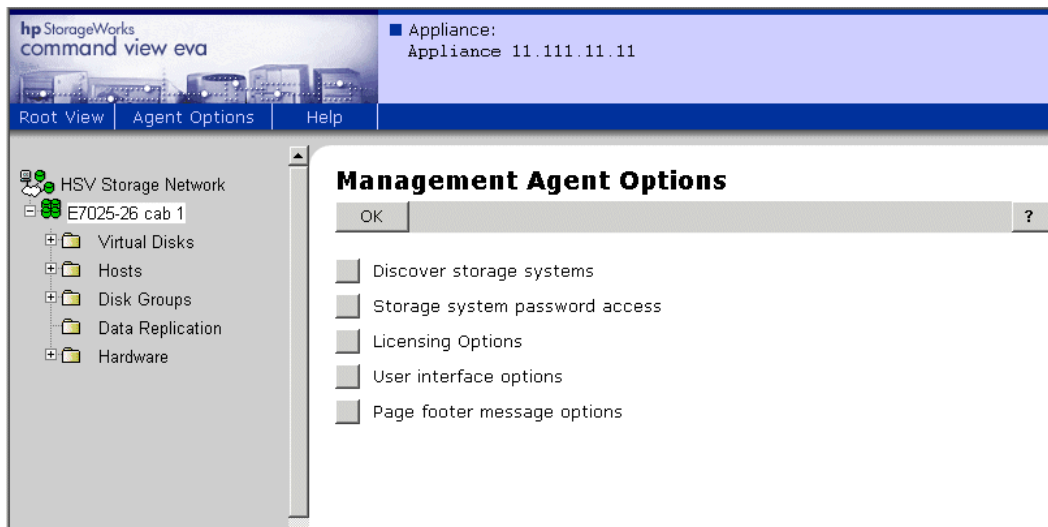


Figure 3.17. HP Command View EVA—Management Agent Options page

3. Click **Storage system password access**.

The Storage System Password Access page displays.



Figure 3.18. HP Command View EVA—Storage System Password Access page

4. Click **Disable**.

The Disable Password Access to Storage System page displays.



Figure 3.19. HP Command View EVA—Disable Password Access to Storage System page

5. Select the storage system World Wide Node Name from the drop-down list.

Note

Make sure you select the storage system from which you cleared passwords using the OCP on the HSV controller.

6. Click **Disable Password**.

A message box displays.

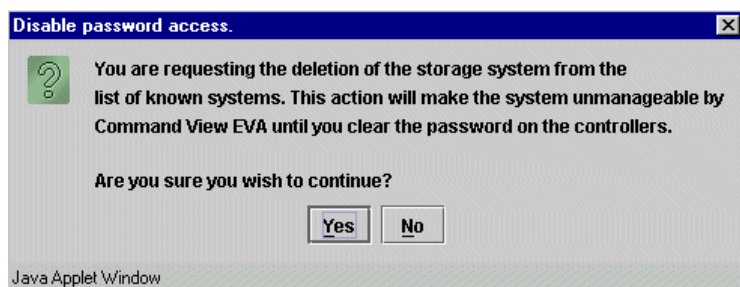


Figure 3.20. HP Command View EVA—Disable password access message box

7. Click **Yes** to disable the password for the selected storage system.

Step 6: Upgrading HP Command View EVA

For information about installing HP Command View EVA, refer to the *HP Command View EVA Getting Started Guide* at <http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00236948/c00236948.pdf>.

For information about installing HP Command View EVA on a Windows server, refer to *HP StorageWorks Command View EVA Windows Server 2003 Installation and Configuration Guide*.

If using the SMA, you must upgrade to Storage Management Appliance software v2.1 before you upgrade to HP Command View EVA v3.3. (See “[Step 3: Upgrading the Storage Management Appliance or the general purpose storage management server](#)” for more information.)

You must be running HSV Element Manager v2.0 or later to upgrade to HP Command View EVA v3.3. You cannot upgrade from HSV Element Manager v1.0 to HP Command View EVA v3.3. To upgrade from HSV Element Manager v1.0 to HSV Element Manager v2.0, please refer to *SANworks by Compaq Upgrade Instructions for Enterprise Virtual Array*. [Table 3.3](#) describes the proper upgrade paths to HP Command View EVA v3.3.

Table 3.3. HP Command View EVA Upgrade Paths

Current Command View EVA Version	Upgrade Path
HSV Element Manager v2.0	1. Upgrade to HP Command View EVA v3.1 2. Upgrade to HP Command View EVA v3.2. 3. Upgrade to HP Command View EVA v3.3.
HSV Element Manager v2.0a	
HP Command View EVA v2.1	
HP Command View EVA v3.0	
HP Command View EVA v3.0a	Upgrade to HP Command View EVA v3.2.
HP Command View EVA v3.1	
HP Command View EVA v3.2	HP Upgrade to Command View EVA 3.3.

Verifying the HP Command View EVA version

To verify the HP Command View EVA version, perform the following steps

1. Launch the Storage Management Appliance software.
2. Log in to the Storage Management Appliance software using a valid username and password.

Note

You must have administrator privileges.

3. Click **Devices** in the tool bar.

The Devices page displays.

4. Click **command view eva**.

The Storage Management Appliance Software launches HP Command View EVA, and the HSV Storage Network Properties page displays.

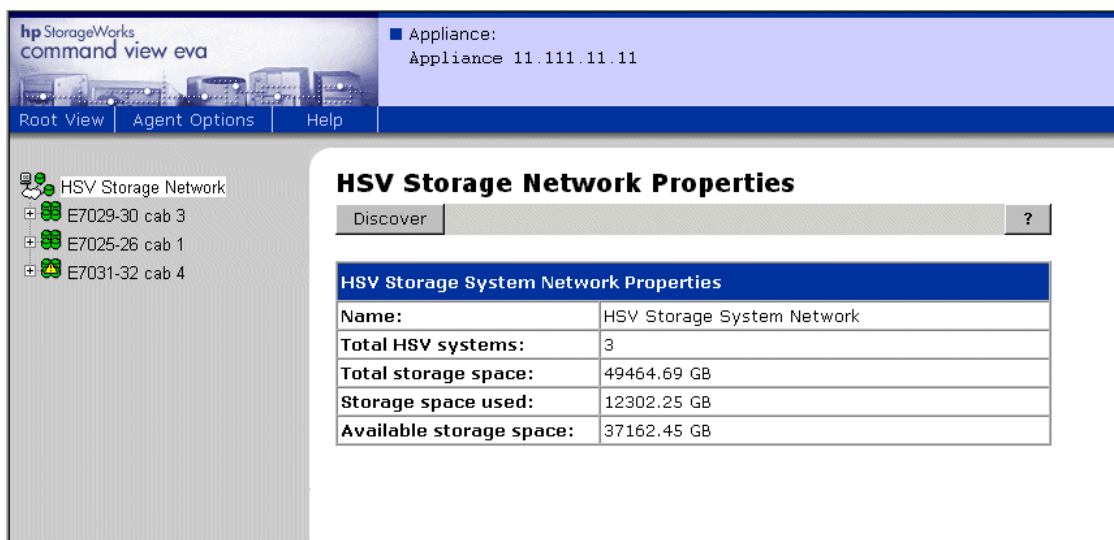


Figure 3.21. HP Command View EVA—HSV Storage Network Properties page

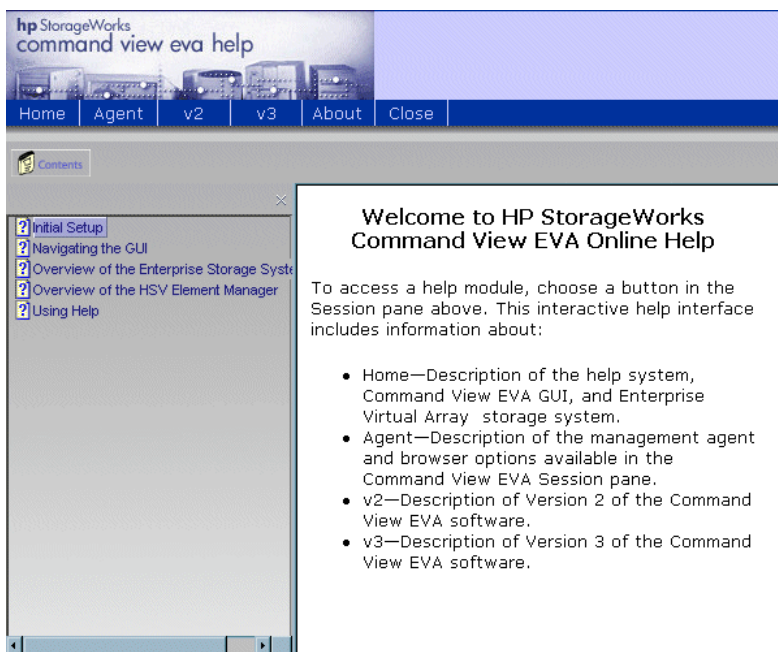
5. Click **Help** in the Session pane.

Figure 3.22. HP Command View EVA Online Help

6. Click **About** in the Help tool bar.

The About page displays the software version of HP Command View EVA.

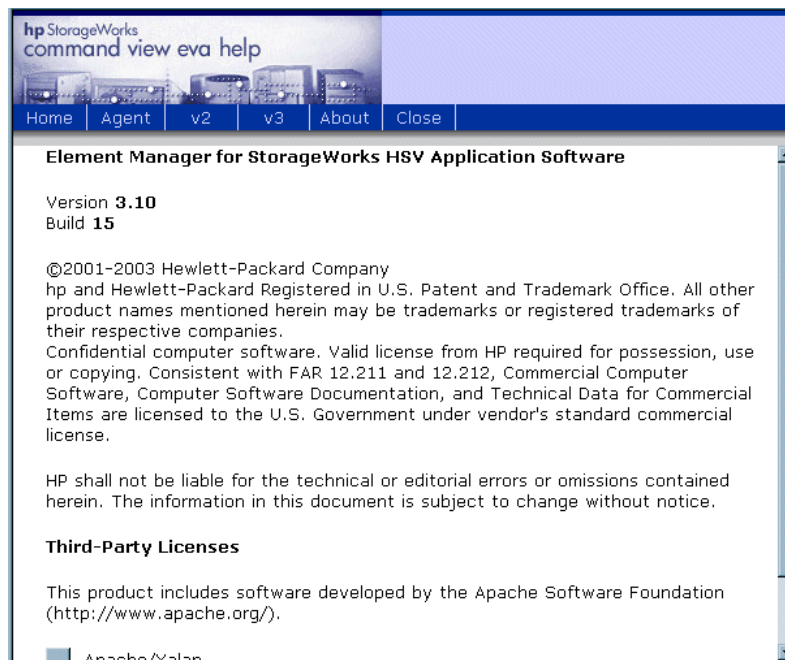


Figure 3.23. HP Command View EVA Help—About page

Important

If you are not using a recommended browser version and JRE (see [Table 1.2](#)), you should update your browser version and JRE now.

Step 7: Loading the add-on licenses

Estimated time to complete

5 minutes per license

If you are upgrading several storage systems in a SAN, the recommended action is to upgrade all of your licenses at the same time. You can add licenses for HP Business Copy EVA and HP Continuous Access EVA.

See the *HP StorageWorks Business Copy EVA License Instructions* and the *HP StorageWorks Continuous Access EVA V 1.2 Getting Started Guide* for more information about obtaining licenses for HP Business Copy EVA and HP Continuous Access EVA, respectively.

Please contact your HP sales representative if you require licenses for HP Business Copy EVA v2.3 and HP Continuous Access EVA v1.2.

To add a license key, perform the following steps:

1. Launch HP Command View EVA in your browser.
2. Click **Agent Options** in the Session pane.

The Management Agent Options page displays.

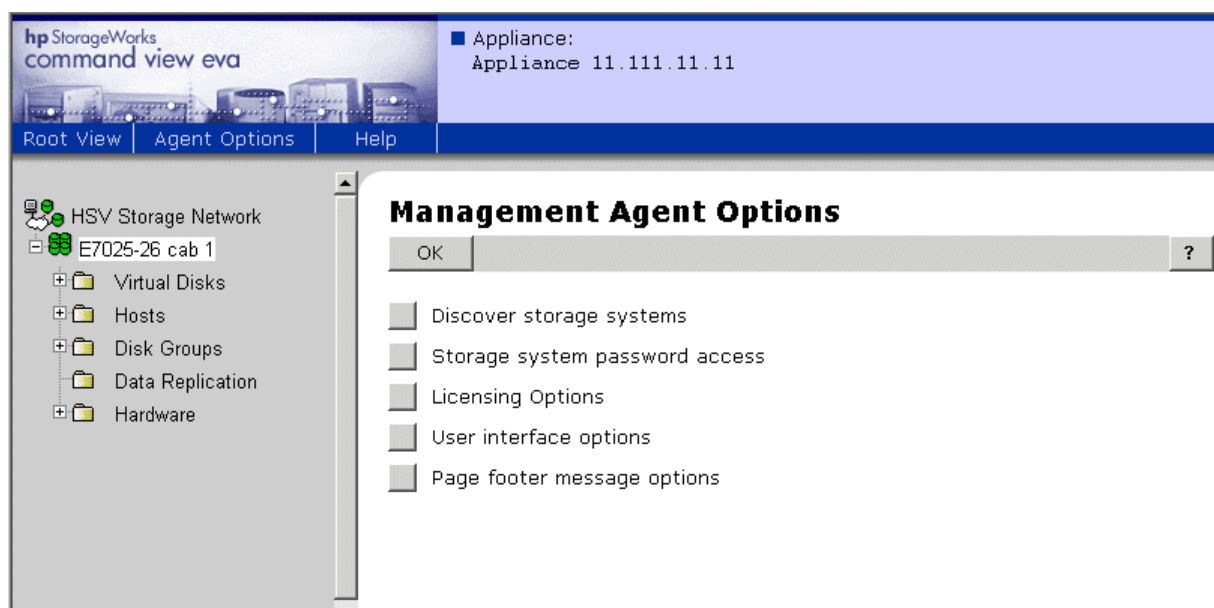


Figure 3.24. HP Command View EVA—Management Agent Options page

3. Click **Licensing options**.

The Licensing Options page displays.

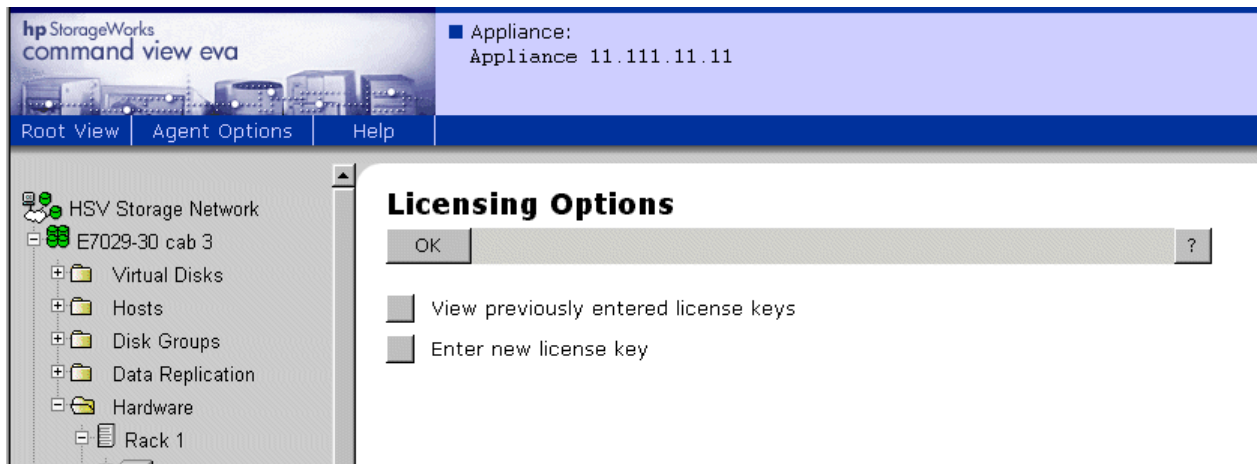


Figure 3.25. HP Command View EVA — Licensing Options page

4. Click **Enter new license key**.

The Add a license page displays.

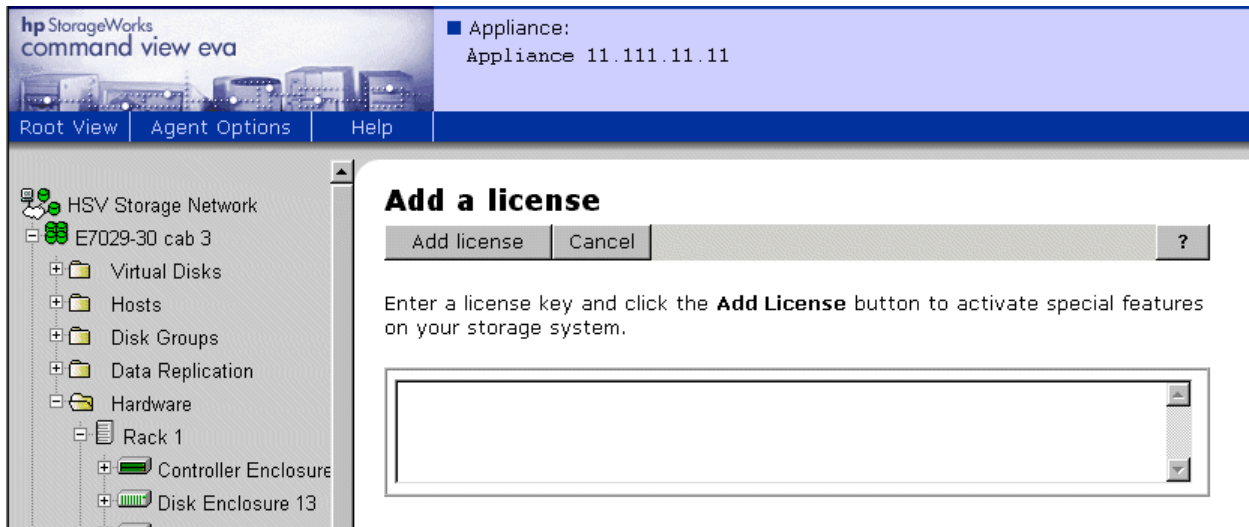


Figure 3.26. HP Command View EVA—Add a license page

5. Copy the license text from the e-mail you received from the license key fulfillment Web site.

Note

For best results, use Microsoft® Notepad or an equivalent text editor to copy and paste the license text.

6. Paste the license text into the text box.

Note

You must enter the license key exactly as it is written in the e-mail you received from the license key fulfillment Web site.

7. Click **Add license**.
8. To enter additional license keys, repeat step 5 through step 7 for each license key.
9. Click **Cancel** or click an icon in the Navigation pane to leave the Add a license page.

Step 8: Upgrading the VCS/Storage System Software to v3.025

Estimated time to complete

45 minutes

Before you can perform an online upgrade of the storage system software to v3.025 (which includes VCS v3.025), you must be running VCS v3.010 (or later) on the HSV controllers. If you need assistance in upgrading to VCS v2.00x or v3.010, please contact an HP Authorized Service Representative.

Note

Contact your HP Authorized Service Representative for assistance in upgrading to 3.025 from any VCS version prior to 3.020.

Note

HP strongly recommends that prior to upgrading to VCS v3.025 you have Instant Support Enterprise Edition installed to verify the health of the array and run v3.012 to ensure that there are no orphan PSEGS.

Table 3.4 describes the proper upgrade paths to VCS v3.025.

Table 3.4. VCS/Storage System Software Upgrade Paths

Current VCS/Storage System Software Version	Upgrade Path
1.021	If you are running v1.021, you must upgrade to a later version. Please contact an HP Authorized Service Representative to assist you.
2.000	1. Upgrade to v2.006. ^{ab} 2. Upgrade to v3.01x ^c . 3. Upgrade to v3.025.
2.002	1. Upgrade to v2.006 ^b . 2. Upgrade to v3.01x ^c . 3. Upgrade to v3.025.
2.003 2.004 2.005	1. Upgrade to v2.006 ^b . 2. Upgrade to v3.01x ^c . 3. Upgrade to v3.025.
2.006	1. Upgrade to v3.01x ^c . 2. Upgrade to v3.025.
3.000 3.001	1. Upgrade to v3.01x ^{c,d} . 2. Upgrade to v3.025.
3.010	1. Upgrade to v3.025.
<div> Note You must upgrade to 3.014 from 3.010 if you are running Continuous Access. </div>	
3.014	
3.020	Upgrade to v3.025
abcd	

^aIf you have a Windows 2000 host, you must perform an offline upgrade to upgrade the storage system software from v2.000 to v2.003.

^bYou can upgrade to v2.003, v2.004, v2.005, or v2.006 depending on your EVA type (refer to Table 2.2).

^cWhen you are running VCS v3.010, do not delete any LUNs, snapshots, or snapclones that exceed 1984GB.

^dIf you are **not** using HP Continuous Access EVA in your storage solution, you can upgrade directly from VCS v3.000 or VCS v3.001 to VCS v3.025.

Upgrading VCS

The following procedure describes [online](#) upgrade of the storage system software. HP recommends that you perform an online when you upgrade from one storage system software version to the next.

During an online upgrade of the storage system software, VCS is upgraded on the HSV controllers, while they are still receiving I/O from the applications on the host servers. The HSV controllers do reboot at the same time (usually within host OS timeout periods). Online upgrades should be conducted at off-peak hours. Furthermore, database applications with access to the storage system should not be running.

Note

You must upgrade to 3.014 before upgrading to 3.025 if you are running Continuous Access with 3.010.

When you upgrade an EVA storage system that is connected to one or more EVA storage systems in an HP Continuous Access EVA relationship, there are some special considerations. Before you upgrade any storage system in an HP Continuous Access EVA relationship, ensure that all of the storage systems are running the same version of VCS. Therefore, when you upgrade one storage system, the resulting storage network will have two versions of VCS. You cannot have more than two VCS versions in an HP Continuous Access EVA solution. During the time that the HP Continuous Access EVA storage systems are running different VCS versions, you cannot make any configuration changes to your storage systems. Furthermore, you must perform the necessary upgrades (or downgrades) to the storage systems in the HP Continuous Access EVA relationship within one week to make all of the VCS versions the same.

Note

You cannot perform an online upgrade if you have a host server with Windows Server 2003 or AIX with SecurePath 2.0D SP2. If you have host servers with these operating systems, you must perform an [offline upgrade](#) of the storage system software. After you perform an offline upgrade on a storage system connected to a Windows Server 2003, rescan the disks in the storage system to verify that the storage is available to the host server.

You can also perform an offline upgrade of the storage system software. The offline upgrade requires you to stop the applications on the host machines to avoid host access to the storage system. The offline upgrade is described in [Step 4](#) of the system software upgrade procedure.

To upgrade the storage system software (including VCS on the HSV controllers), perform the following steps:

Note

Make sure you add the required license keys before you upgrade the VCS version. See [Step 7: Loading the add-on licenses](#) for more information about adding license keys. See [Required licenses](#) for information about license versions.

1. Open HP Command View EVA in your browser.
 2. Select a storage system in the Navigation pane.
-

Note

You can select an uninitialized or initialized storage system.

The properties page for the selected storage system displays.

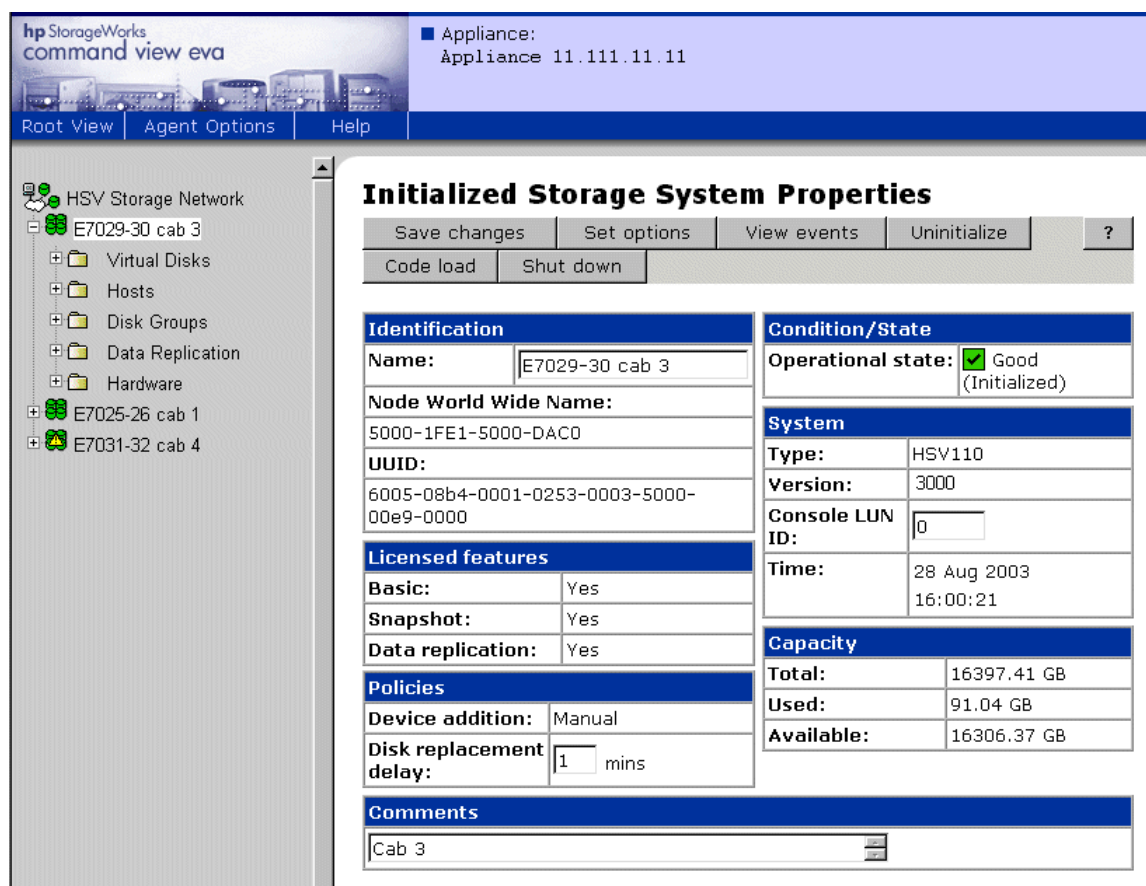


Figure 3.27. HP Command View EVA—Initialized Storage System Properties page

3. Check the status of all hardware components in the storage system. Clear all of the hardware errors before proceeding to the next step.



Caution

If you do not clear all of the hardware errors before you load the new system software, you risk losing all hardware-related error reports after you load the new system software.

4. (Optional) If you are performing an offline upgrade, stop all applications running on the host machines that have access to the storage system you are upgrading. After you have completed the storage system software upgrade, you can start the applications on the host machines.
5. Disable the failsafe mode on all DR groups.

**Caution**

You cannot load code onto the controllers if:

- The storage configuration is being changed in any way.
Wait until all configuration changes are completed in the HP Command View EVA before proceeding with a code load.
- In an HP Continuous Access EVA configuration, a DR group is logging, merging, leveling, or copying. Furthermore, none of the DR groups can be in a failsafe locked state.
Click the DR group icon in the Navigation pane. Check the **Log State** in the DR Group Properties page.

Stop all copying in HP Continuous Access EVA before you load code.

- In an HP Continuous Access EVA configuration, the connection between the storage systems is compromised or failed.
Click the Data Replication folder in the Navigation pane. Check the **Connection State** in the Data Replication Folder Properties page.

In HP Continuous Access EVA configurations, all EVA storage systems must be running normally with fully functional controller pairs.

If you attempt to load code onto the controllers before the above conditions are met, controller operation will fail.

In an HP Continuous Access configuration, after you load code onto the first controller pair (for example, the source controller pair), you must wait at least three minutes, or until the preceding conditions are met on the second controller pair.

6. Click **Code load**.

A confirmation message displays.

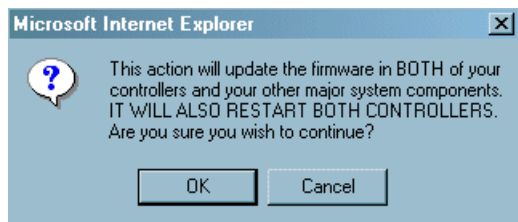


Figure 3.28. HP Command View EVA—first code load confirmation message

7. Click **OK**.

The Code Load Storage System-Page 1 displays.

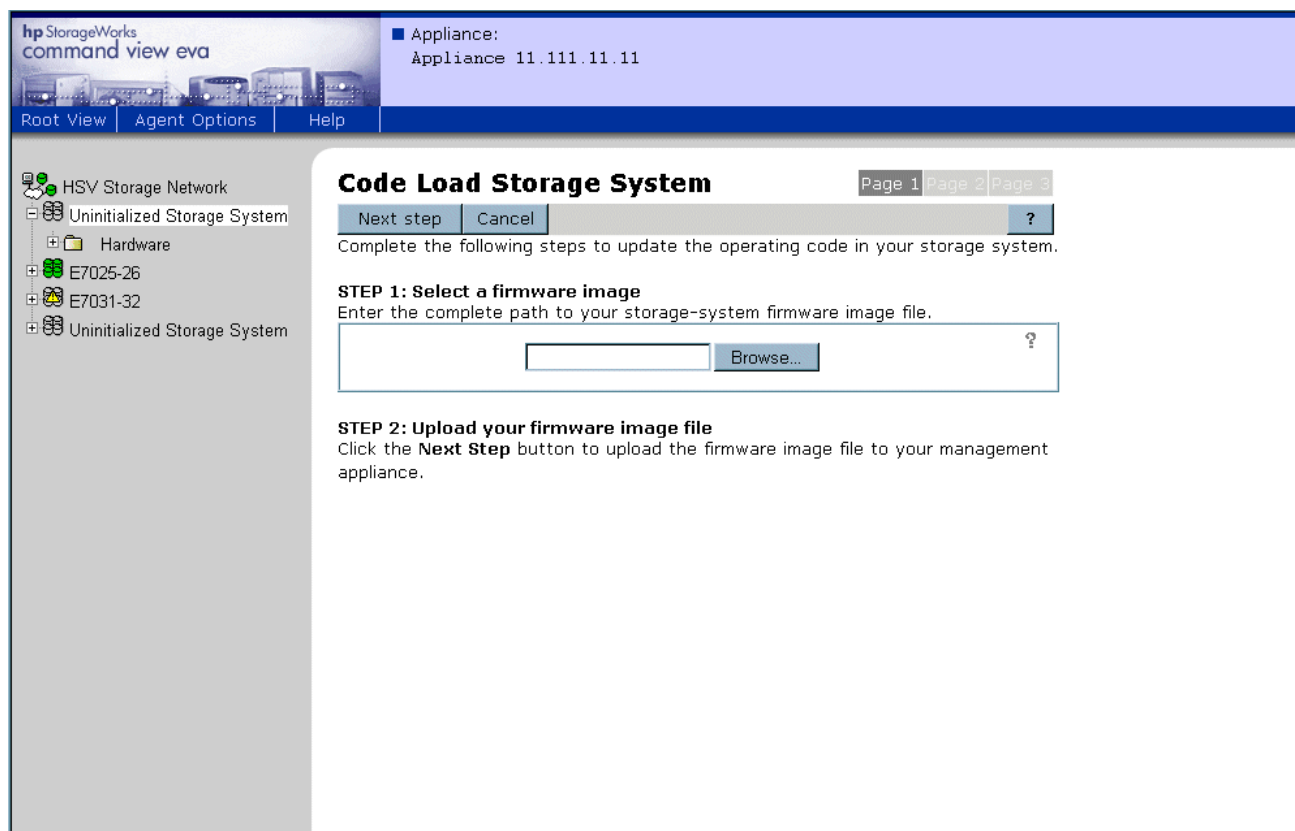


Figure 3.29. HP Command View EVA—Code Load Storage System-Page 1

8. Insert the installation CD-ROM into the computer from which you are browsing.
9. Click **Browse** and select the file containing version 3.025 of the storage system software from the installation CD-ROM.

The standard format for the filename is ent-vxxxx.sss, where xxxx represents the version number.

For an online upgrade on an EVA5000, select either the `\\HSV110\3025\ENT_3025.SSS` or `\\HSV110\LATEST\HSV110.SSS` file (the files are identical). For an online upgrade on an EVA3000, select either the `\\HSV100\3025\RUN_3025.SSS` or `\\HSV100\LATEST\HSV100.SSS` file (these files are identical).

10. Click **Next Step**.

The Code Load Storage System-Page 2 displays.

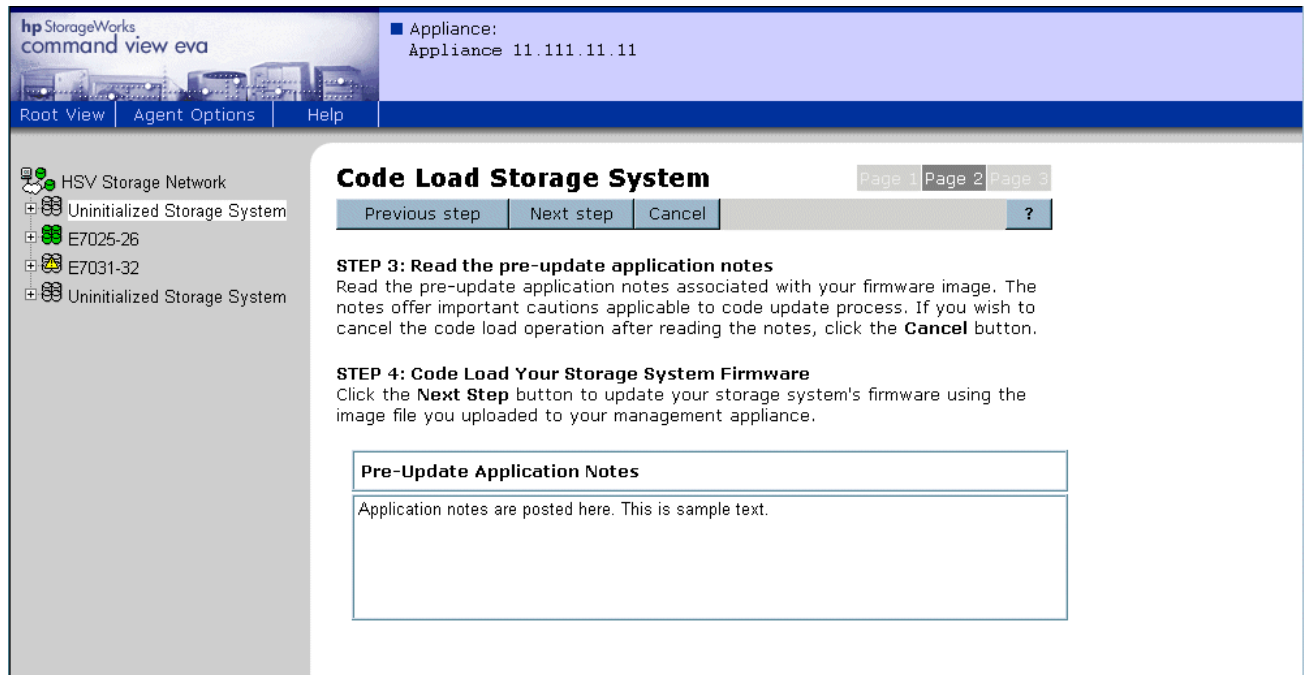


Figure 3.30. HP Command View EVA—Code Load Storage System-Page 2

11. Click **Next Step**.

A confirmation message displays.

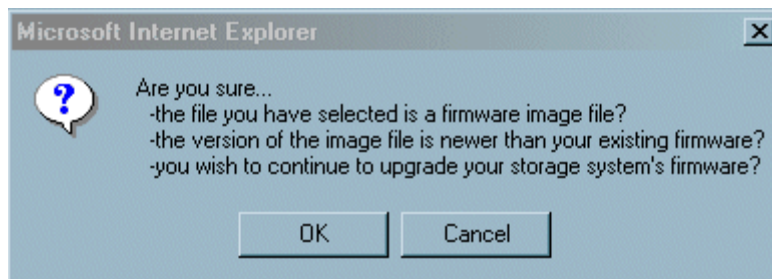


Figure 3.31. HP Command View EVA—file confirmation message

12. Click **OK**.

An upgrade confirmation message displays.

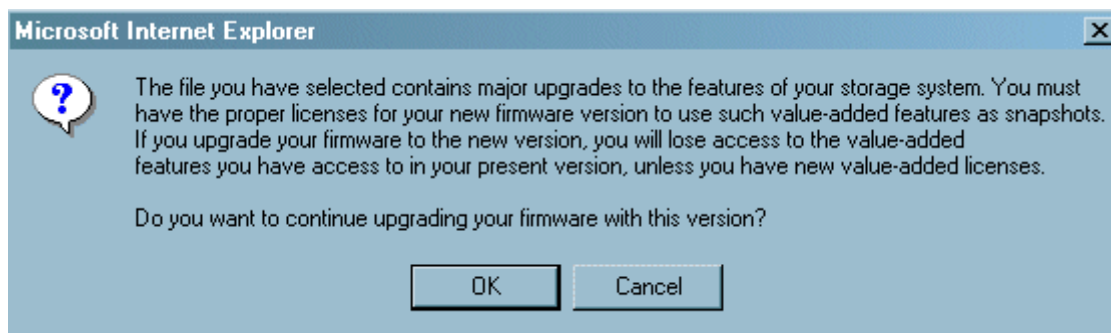


Figure 3.32. HP Command View EVA—upgrade confirmation message

13. Click **OK** to confirm that you have the proper licenses.

The new storage system software is loaded onto the HSV controllers, and the firmware on the associated Fibre Channel drive enclosures is upgraded.

Note

For the VCS v3.025 upgrade, the drive firmware is located in a separate file. To upgrade the drive enclosure firmware, see [Upgrading drive firmware](#) and repeat step 3 through step 12 for the drive firmware.

During this process, a command in progress message displays.

A command is in progress on this management agent. You must wait for the outstanding command to complete before performing another action . . .



(Caution: Do not use the browser Back button to access this page. Doing so will duplicate the current action.)

Figure 3.33. HP Command View EVA—command in progress message

The Code Load Storage System-Page 3 displays. The HSV controllers restart.

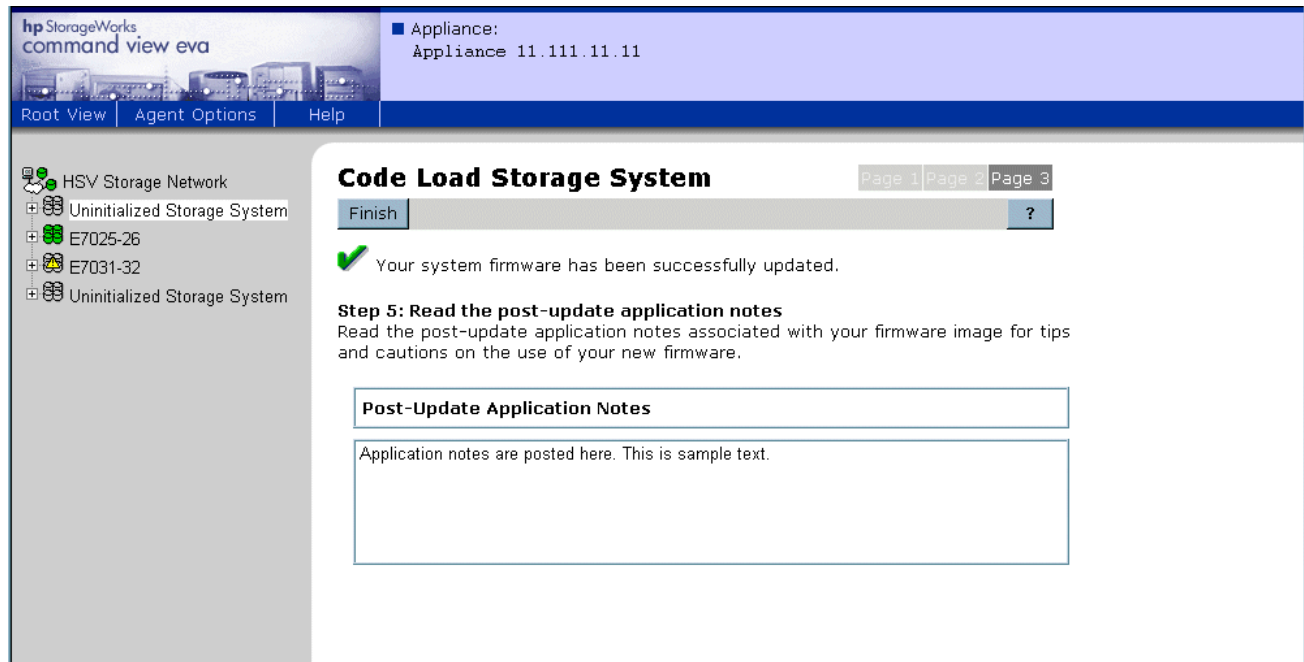


Figure 3.34. HP Command View EVA—Code Load Storage System-Page 3

Note

The software loads in parallel on the drive enclosures. During the software update, the EMUs on the drive enclosures might flash red status indicators and sound an alarm. After the software update completes, the flashing red status indicators and alarm sound cease. The process of updating the enclosure software continues in the background after the controller software is updated.

During the EMU firmware upgrade, all of the disk drives are listed in the Unmappable Hardware folder and all of the disk enclosure bays disappear from the navigation tree. The firmware upgrade can take up to 10 minutes to complete. After the upgrade has completed, the disk enclosure bays are listed under the Disk Enclosure elements.

The software loads on the HSV controllers. The HSV controllers synchronize using the new software. The *Scanning for disks* message on the controllers' OCPs indicates that synchronization is taking place.

14. Click **Finish** after the HSV controllers have restarted.

The HP Command View EVA client refreshes.

An EMU firmware update message displays.

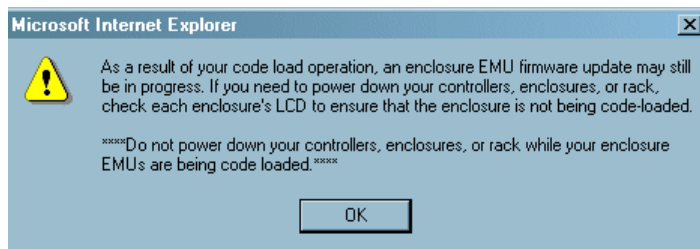


Figure 3.35. HP Command View EVA—EMU firmware update message

15. Click **OK**.
16. Refresh the browser.
 - In Internet Explorer, press **Ctrl** and click **Refresh** in the tool bar.
 - In Netscape Navigator, press **Shift** and click **Reload** in the tool bar.
17. Click the storage system icon in the Navigation pane to verify the version of the storage system software.

The Initialized Storage System Properties page displays.

hp StorageWorks command view eva

Appliance: 11.111.11.11

Root View | Agent Options | Help

HSV Storage Network

- E7029-30 cab 3
 - Virtual Disks
 - Hosts
 - Disk Groups
 - Data Replication
 - Hardware
- E7025-26 cab 1
- E7031-32 cab 4

Initialized Storage System Properties

Save changes | Set options | View events | Uninitialize | ?

Code load | Shut down

Identification		Condition/State	
Name:	E7029-30 cab 3	Operational state:	<input checked="" type="checkbox"/> Good (Initialized)
Node World Wide Name:		System	
5000-1FE1-5000-DAC0		Type:	HSV110
UUID:		Version:	3025
6005-08b4-0001-0253-0003-5000-00e9-0000		Console LUN ID:	0
Licensed features		Time:	05 Sep 2005 13:40:58
Basic:	Yes	Capacity	
Snapshot:	Yes	Total:	16397.41 GB
Data replication:	Yes	Used:	90.45 GB
Policies		Available:	16306.96 GB
Device addition:	Manual	Comments	
Disk replacement delay:	1 mins	Cab 3	

Figure 3.36. HP Command View EVA—Initialized Storage System Properties page

18. Enable the failsafe mode on all DR groups.

Upgrading drive firmware

Be sure to review the [Recommendations](#) before upgrading drive firmware.

Recommendations

Before a drive firmware upgrade, back up all of your data.



Caution

If the code load is interrupted by power failure, reboot, or drive removals and additions, data can be lost.

Do not power off any components or perform controller resynchs or reboots during an upgrade.

Do not perform HP Continuous Access copy/merge activities across sites, site failovers, cloning, or grouping or ungrouping of disks during an upgrade.

If upgrading destination drives on a system with HP Continuous Access installed:

Before a drive firmware upgrade, back up all of your data. If upgrading destination drives on a system with HP Continuous Access installed:

- Suspend the intersite link and upgrade all drives on the destination array using the [Emergency quick load](#) procedure
- Resume the intersite link and allow the merge to complete
- Perform site failover
- Suspend the intersite link again and upgrade all drives on the new destination array using the [Emergency quick load](#) procedure
- Resume the intersite link and allow the merge to complete
- Perform site fallback

At the beginning of a drive firmware upgrade, a calculation is performed to determine whether enough space is available. If space is exceeded during an upgrade, an event (0x0B01B515) is logged and the upgrade is suspended until more storage is added to the array.

Table 3.5. Upgrade events

Event	Indicates
0x0B020004	The drive image is loaded into memory in preparation for code load.
0x0B030004	The drive image is removed from memory.
0x0B040004	The drive upgrade has started.
0x0B050004	The drive upgrade has completed.

Emergency quick load

Estimated time to complete

15–30 minutes

Upgrade the drive firmware after you upgrade VCS.



Caution

Back up all of your data. If the code load is interrupted by power failure, reboot, or drive removals and additions, data can be lost.

To upgrade the drive firmware, perform the steps in [Upgrading VCS](#) using a drive firmware superfile with the following naming convention:

DRVxxxx_em.sss, where xxxx represents the version number. The drive firmware superfile is contained on the same CD as VCS.

Review the text that appears in HP Command View EVA to confirm that you are using the correct load method.

After you upgrade the drive firmware, wait five minutes. Using the Controller Event Log in HP Command View EVA, verify that the drive firmware was successfully upgraded.

Upgrading firmware on individual drives

Contact your HP Authorized Service Representative for further information.

Step 9: Adding passwords to the HSV controllers (optional)

Estimated time to complete











15 minutes

Use the following procedure to add a password to the HSV controller pair.

Note

When you add a system password to the controller, you must enable password access in the HP Command View EVA with access to this system.

Using the OCP on the HSV controller:

1. Press  to leave the default display.
2. Press  three times to scroll to System Password.
3. Press  to select System Password.
4. Press  to display CHANGE PASSWORD? NO.
5. Press  to display CHANGE PASSWORD YES.
6. Press  to accept YES and go to step 7.
7. Press either  or  to select an uppercase or lowercase character.
8. Press  to accept a character and select the next password character. The character display changes to an asterisk.
9. Repeat step 7 and step 8 for the remaining seven characters.
10. Press  to accept the password.

The password is changed. The system automatically returns to the default display.

11. Enable password access to the storage system in HP Command View EVA.

Enabling password access in HP Command View EVA

Estimated time to complete

10 minutes

To enable password access to a storage system, perform the following steps:

1. Launch HP Command View EVA in your browser.
2. Click **Agent Options** in the Session pane.
The Management Agent Options page displays.
3. Click **Storage system password access**.

The Storage System Password Access page displays.

4. Click **Enable**.

The Enable Password Access to a Storage System page displays.

Figure 3.37. HP Command View EVA—Enable Password Access to a Storage System page

5. Select the World Wide Node Name of the storage system for which you want to enable password access.
6. Type the password in the **Password** and **Confirm password** fields.

Note

Make sure you use the same password you entered into the HSV controller OCP.

7. Click **Enable Password**.

A message box displays.

8. Click **OK**.

HP Command View EVA enables password access to the storage system.

Step 10: Installing SMI-S EVA (optional)

HP StorageWorks SMI-S EVA v3.3 provides the Storage Management Initiative Specification (SMI-S) interface for the management of HP StorageWorks EVA arrays.

SMI-S EVA runs as a service, by default, and starts when HP Command View EVA is started. For information about manually starting and stopping SMI-S EVA, see [Starting and stopping SMI-S EVA](#).

You can install SMI-S EVA v3.3 after installing HP Command View EVA v3.3.

Note

After installation, change the default user names and passwords using *UserAccountsManager.bat*. See [UserAccountsManager.bat](#) for more information.

To install SMI-S EVA, perform the procedures detailed in the following sections:

- [Uninstalling SMI-S EVA](#)
- [Installing SMI-S EVA on the Storage Management Appliance](#)
- [Verifying SMI-S EVA installation](#)
- [Configuring SMI-S EVA](#)
- [Enabling SSL](#)

Uninstalling SMI-S EVA

You must uninstall the previous version of SMI-S EVA before you install version 3.3 of SMI-S EVA.

To uninstall a previous version of SMI-S EVA, perform the following steps:

1. Close all browser windows, MMC sessions, Terminal Services sessions, and Java applets that are open on the desired Storage Management Appliance.

Note

Closing these windows and sessions ensures that no remnant files are left in cache memory after the SMI-S EVA uninstallation. If you do not close the windows and sessions, the uninstallation procedure may be interrupted.

2. From a client computer, launch a Web browser and browse to the Storage Management Appliance, using the following format:

```
http://<managementappliance_name>
```


Note

The default appliance name for a Storage Management Appliance (hardware version 1.0) begins with *swma* and includes the last 6 characters of the appliance serial number.

If the Storage Management Appliance software was restored using the Quick Restore CD v2.0, then the default appliance name begins with *sma* and includes all 12 characters (10 characters for Storage Management Appliance III) of the appliance serial number.

The default appliance name for a Storage Management Appliance II begins with *sma* and includes all 12 characters (10 characters for Storage Management Appliance III) of the appliance serial number.

The serial number is displayed on a sticker which is usually pasted to the lower right side of the appliance (when viewed from the front).

3. In the Enter Network Password page, type your **User Name** and **Password**, and click **OK**.

The Storage Management Appliance software home page displays.

4. Click **Settings**.
5. Click **Maintenance**.
6. Click **Remove Software**.

The Remove Application page displays.

7. Click **hp StorageWorks SMI-S for EVA**.
8. Click **Remove**.

The Remove Application page displays a remove application confirmation message.

9. Click **OK** to remove SMI-S EVA.

The following message displays:

Application has been removed.

See below for details (if any).

hp StorageWorks SMI-S for EVA <Date> <Time>

Uninstall Complete.

**Caution**

Clicking **OK** in step 9 initiates the removal of SMI-S EVA software from the Storage Management Appliance.

10. Verify that the **hp StorageWorks SMI-S for EVA** entry is not present on the Manage Tools page.

Installing SMI-S EVA on the Storage Management Appliance

You can use two methods to install the SMI-S EVA software:

- [Installing from a CD-ROM](#)
- [Installing from a local disk on the Storage Management Appliance](#)

See [Troubleshooting SMI-S EVA](#) for help with common SMI-S EVA problems.

Installing from a CD-ROM

Complete the following procedure to install SMI-S EVA v3.3 on the Storage Management Appliance from the HP Command View EVA CD:

1. Close all browser windows, Microsoft Management Console (MMC) sessions, Terminal Services sessions, and Java applets that are open on the Storage Management Appliance.
2. From a client computer, launch a Web browser and browse to the Storage Management Appliance using the following format:

`http://<managementappliance_name>`

Note

The default appliance name for a Storage Management Appliance (hardware version 1.0) begins with *swma* and includes the last 6 characters of the appliance serial number.

If the SMA software was restored using the Quick Restore CD v2.0, then the default appliance name begins with *sma* and includes all 12 characters (10 characters for Storage Management Appliance III) of the appliance serial number.

The default appliance name for an SMA II begins with *sma* and includes all 12 characters (10 characters for Storage Management Appliance III) of the appliance serial number.

The serial number is displayed on a sticker which is usually pasted to the lower right side of the appliance (when viewed from the front).

3. In the **Enter Network Password** page, type your **User Name** and **Password**, and click **OK**.

The Storage Management Appliance software home page displays.

4. Click **Settings**.
5. Click **Maintenance**.
6. Click **Install Software**.

An Installation Wizard page displays.

Note

SMI-S EVA does not support reinstallation. Uninstall the previous version of SMI-S EVA before installing SMI-S EVA v3.3. To uninstall SMI-S EVA, see [Uninstalling SMI-S EVA](#).

7. Click **Next**.
8. Choose **CD-ROM Drive on the Storage Management Appliance** and click **Next**.
9. When prompted, insert the HP Command View EVA CD in the Storage Management Appliance CD-ROM drive.
10. From the drop-down list, choose **hp SMI-S EVA**.
11. Click **Next** to start the installation.

The following message displays:

```
Installation is in progress.
```

The time taken to complete the installation depends on the size of the application and the speed of the network connection. After the installation is complete, the following message appears:

```
Installation is complete.
```

```
Installing hp StorageWorks SMI-S for EVA <Date> <Time>
Install Complete
```

Note

In some cases, the message, *Rebooting this Appliance*, displays.

If the installation fails for any reason, the Storage Management Appliance does not permit a subsequent installation attempt for one hour following the failed attempt. Attempting an installation during this one hour period displays an error message.

12. Click **Finish**.
13. Verify that an SMI-S EVA entry is displayed on the Manage Tools page, in the Storage Management Appliance software.

To view the Manage Tools page, click **Settings** on the Storage Management Appliance home page, and then click **Manage Tools**.

If an SMI-S EVA entry is displayed, the installation is complete.

If the entry is not displayed, then go to step 8 to repeat the installation procedure.

Installing from a local disk on the Storage Management Appliance

To install SMI-S EVA v3.3 software on the Storage Management Appliance, complete the following procedure:

1. Copy the installation file *hpSMISEVA_3_3.swp* to a shared network drive that is accessible from the Storage Management Appliance.
2. Open a Microsoft Terminal Services session to connect and log on to the Storage Management Appliance. If Terminal Services is not available, connect a monitor, mouse, and keyboard to the Storage Management Appliance.
3. Connect from the Storage Management Appliance to the shared network drive that contains the file, *hpSMISEVA_3_3.swp*.
4. Copy *hpSMISEVA_3_3.swp* from the shared network drive into the following directory on the Storage Management Appliance:

```
C:\COMPAQ\SWPInstallKits
```

5. Disconnect from the shared network drive and log off Terminal Services.
6. Disconnect the monitor, keyboard, and mouse.
7. From a client computer, launch a Web browser and browse to the SMA, using the following format:

```
http://<managementappliance_name>
```

Note

The default appliance name for a Storage Management Appliance (hardware version 1.0) begins with *swma* and includes the last 6 characters of the appliance serial number.

If the Storage Management Appliance software was restored using the Quick Restore CD v2.0, then the default appliance name begins with *sma* and includes all 12 characters (10 characters for Storage Management Appliance III) of the appliance serial number.

The default appliance name for a Storage Management Appliance II begins with *sma* and includes all 12 characters (10 characters for Storage Management Appliance III) of the appliance serial number.

The serial number is displayed on a sticker which is usually pasted to the lower right side of the appliance (when viewed from the front).

8. In the **Enter Network Password** page, type your **User Name** and **Password**, and click **OK**.

The Storage Management Appliance software home page displays.

9. Click **Settings**.
10. Click **Maintenance**.
11. Click **Install Software**.

The Installation Wizard welcome page displays.

Note

SMI-S EVA does not support reinstallation. Uninstall the previous versions of SMI-S EVA before installing SMI-S EVA v3.3. To uninstall SMI-S EVA see [Uninstalling SMI-S EVA](#).

12. Click **Next**.
13. From the Installation Wizard, select **Local Disk on the Storage Management Appliance**.
14. Click **Next**.
15. From the drop-down list, choose the *hpSMISEVA_3_3.swp*.
16. Click **Next**.
17. From the drop-down list, choose *hp SMI-S EVA*.
18. Click **Next** to start the installation.

The following message displays:

```
Installation is in progress.
```

The time taken to complete the installation depends on the size of the application and the speed of the network connection. After the installation completes, the following message displays:

Installation is complete

Installing hp StorageWorks SMI-S for EVA <Date> <Time>
Install Complete

Note

In some cases, the message, `Rebooting this Appliance`, is displayed.

If the installation fails for any reason, the Storage Management Appliance does not permit a subsequent installation attempt for one hour following the failed attempt. Attempting an installation during this one hour period displays an error message.

19. Click **Finish**.

20. Verify whether an SMI-S EVA entry exists on the Manage Tools page in the Storage Management Appliance software.

To view the Manage Tools page, click **Settings** on the Storage Management Appliance home page, and then click **Manage Tools**.

If an SMI-S EVA entry is displayed, the installation is complete.

If the entry is not displayed, complete one of the following procedures:

- Go to step 8 and repeat the installation procedure.
- Delete the files in the `C:\Program Files\Hewlett-Packard\hp SMI-S\EVAProvider` folder. Go to step 8 and repeat the installation procedure.

Note

The CIMOM, by default, runs on the 5988 port.

Verifying SMI-S EVA installation

To verify the SMI-S EVA installation, complete the following procedure:

1. Verify that **hp StorageWorks SMI-S for EVA** is listed under **Application** on the Manage Tools page in the Software Management Appliance software.

To access the Manage Tools page, click **Settings** on the Storage Management Appliance home page and then click **Manage Tools**.

2. Verify that the directory `C:\Program Files\Hewlett-Packard\SMI-S\EVAProvider` exists on the Storage Management Appliance.

Configuring SMI-S EVA

You must complete the post-installation steps in this section before you can use SMI-S EVA.

Post installation steps

After SMI-S EVA is installed, add `127.0.0.1` to the list of recipients who receive events generated by every HSV pair connected to the management appliance. This can be done using the hp StorageWorks Storage Management Appliance software. In addition, configure the event and host notifications as indicated in [Configuring event and host notifications](#).

The configuration files for setting up the SMI-S EVA service are in the following directory where SMI-S is installed: `C:\Program Files\Hewlett-Packard\SMI-S\cimom`.

Modify the configuration files as indicated in [Table 3.6](#).

Table 3.6. Configuration Files

File	Description
<i>EVAprovider.properties</i>	Used for configuring the provider.
<i>cim.properties</i>	CIMOM related parameters for enabling SSL, JAAS and so on.
<i>JAAS.policy</i>	Used for configuring an access control list.

You can manually edit the configuration files by connecting through Windows Terminal Services. After editing the configuration parameters, be sure to restart the SMI-S EVA service.

EVAprovider.properties

Configure `EVAprovider.properties` files as indicated in [Table 3.7](#).

Table 3.7. Evaprovider.properties

Item	Description
Apiserver	Server name where the HP Command View EVA runs (usually localhost).
UserName	UserName used to connect to the HP Command View EVA. (This field is required if Apiserver is not set to localhost).
PortNumber	HP Command View EVA runs on 12301 port.
PassWord	Password used to connect to the HP Command View EVA. (This field is required if Apiserver is not set to localhost).
NameSpace	Represents the namespace supported by the provider. The default value is root/EVA.
DEBUG	Enables the debug option if you set its value to true. To disable the debug option, set its value to false. If you enable the debug option, the debug data, for example, xml packets, is stored in the debug files in the CIMOM directory. All debug files are stored in the following directory: <code>C:\ProgramFiles\Hewlett-Packard\SMI-S\cimom</code> .
MAX_LOG_FILES	Indicates the maximum number of log files that are allowed in the cimom directory. You can use it to limit the debug data that accumulates in the directory. This action removes the old data in a cyclic fashion. In addition, the timestamp, which is appended as part of the file name, helps in finding the most recent debug data file. If you do not specify the value, MAX_LOG_FILES uses the default value, 3.
MAX_LOG_FILESIZE	Indicates the maximum size of the debug file. If you do not specify a value for MAX_LOG_FILESIZE, it uses the default value, 1MB.
LIFECYCLE_INDICATION_POLL_FREQUENCY	Indicates the frequency (in minutes) at which the EVA provider queries the underlying device to sense the lifecycle-related changes. The minimum permitted value is 2 minutes, and the default value is 10 minutes. To receive the SMI-S lifecycle indications at a quicker rate, set a lower value for this parameter. Note: A low value for this property can create an overhead on the software. In addition, it can increase the overall response time of the HP Command View EVA and SMI-S EVA provider software.

Cim.properties file

Modify the parameters in the `cim.properties` file as indicated in [Table 3.8](#).

Note

Do not modify any parameter that is not listed in [Table 3.8](#).

Table 3.8. Cim.properties File

Field	Purpose
EnableBasicAuthorization (true or false)	Set to true for the basic level of authentication and authorization.
EnableCompleteAuthorization (true or false)	Set to true for complete authentication and authorization. Each command should be authorized before it is executed. If EnableCompleteAuthorization is set to true, the value of EnableBasicAuthorization is ignored.
EnableSSL	Set to true to enable SSL.
LogResponseSeparate	Set to true to separate the requests and response packets.
LogFilesCount	Set to true to track total number of files and to remove old data in a cyclic fashion.
MaxLogFileSize	Set to true to indicate the maximum size of the debug file.

UserAccountsManager.bat

User accounts are organized into groups, and a set of permissions are assigned to each group using JAAS. To manage the user accounts use the script file (*UserAccountsManager.bat*) located in the home directory. This is the directory where the CIM Object Manager is installed. Typically, it is in C:\Program Files\Hewlett-Packard\SMI-S\cimom. To find the list of switch options supported, run this script file with the -h option.

To list the available groups and users, execute this command:

```
UserAccountsManager -LG
```

Note

There is no other input parameter other than -LG to list the available groups and users. Currently the available groups are *Administrator* and *User*. There are no commands to add or remove the groups. User accounts in the *Administrator* group have complete control of all operations. User accounts in the *User* group can only execute read-only operations.

To add a user, execute this command:

```
UserAccountsManager -AU -G <Group> -U <UserName> -P <Password>
```

where:

-G is the group name for the user.

-U is the user name.

-P is Password for the user.

Example:

```
UserAccountsManager -AU -G Administrator -U Tom -P Vanilla2
```

Note

The parameter Group is one of the groups listed by the -LG option. A user name can exist in only one group.

To change a user password, execute this command:

```
UserAccountsManager -CP -U <UserName> -O <OldPassword>
-N <NewPassword>
```

where:

- U is the user name.
- O is the old password of the user.
- N is the new password for the user.

Example:

```
UserAccountsManager -CP -U Tom -O Vanilla2 -N Chocolate3
```

To remove a user, execute this command:

```
UserAccountsManager -DU -U <UserName>
```

where:

- U is the user name.

Example:

```
UserAccountsManager -DU -U Tom
```

For help, execute this command:

```
UserAccountsManager -h
```

where:

- h is help.

Configuring event and host notifications

You can configure event and host notifications using the GUI of the hp StorageWorks Storage Management Appliance software.

Configuring event notification

To configure the event notification, complete the following procedure:

1. In the home page, select **Devices**.
The Devices page displays.
2. Select **command view eva**.
The HSV Storage Network Properties page displays.
3. In the left pane, select one of the subsystems of HSV Storage Network.

The Initialized Storage System Properties page displays.

4. Click **Set Options**.

The System Options page displays.

5. Select **Configure event notification**.

The Configure Event Notification page displays. This page contains the following sections:

- Configure events individually
- Configure events using a configuration file

6. Under the **Configure events individually** section, select the required events or all the events (Critical, Warning, and Normal), and click **Configure**.

The Set Event Notification Options page displays.

7. From the **Event Notification List** table, select the required events, and click **Save Changes**.

The Configure Event Notification page displays.

8. To complete the event notification configuration, click **OK**.

Configuring host notification

To configure the host notification, complete the following procedure:

1. Follow steps 1 through 4 mentioned in [Configuring event notification](#).

2. Select **Configure host notification**.

The Configure Host Notification page displays.

3. Click **Modify host list**.

The Modify Host Notification List page displays.

4. Under the **Add a host to the list** section, in the Host Name box, type the host name, and click **Save Changes**.

The Configure Host Notification page displays.

5. To complete the host notification configuration, click **OK**.

SSL support

SMI-S EVA uses a SSL server-side certificate to help clients securely communicate with the SMI-S server. A self-signed certificate (**hpSMIS.cert**) is packaged with SMI-S EVA. The certificate is located in the following directory:

C:\Program Files\Hewlett-Packard\SMI-S\cimom.

The certificate can be replaced with a different certificate by the administrator. Be sure to retain the certificate name (**hpSMIS.cert**). A client that wants to use SSL must copy the

certificate from `C:\Program Files\Hewlett-Packard\SMI-S\cimom` and put it into its trust store.

A trust store is a repository of trusted certificates that are recognized by the client program. Once the SMI-S certificate is *trusted* by a client program, the client communicates with the SMI-S server using SSL. SSL helps secure the client server communication by providing clients with the ability to authenticate the entity claiming to be the SMI-S server, and also by protecting the integrity of the transmitted data.

Port occupation

The CIMOM, by default, runs on port 5988 in both SSL and non-SSL modes. If this port is occupied by another process, the CIMOM searches for subsequent ports. For example, if port 5988 is occupied, the CIMOM searches for 5989 and 5990 ports. If these ports are also occupied, the CIMOM fails to start.

Enabling SSL

Enable SSL by setting the **EnableSSL** property in `cim.properties` to **true**. This file is located in the directory `C:\Program Files\Hewlett-Packard\SMI-S\cimom`. Once **EnableSSL** is set to **true**, all the client connections will use the https protocol.

If the client is implemented using Java, complete the following procedure to issue the certificate:

1. Import the server certificate into the client trust store. To import the server certificate, complete the following procedure:
 - a. Copy the server certificate to the client system.
 - b. Use the Java keytool to import the certificate into the client trust store.


```
$ keytool -import -alias hpsmis -file hpSMIS.cert
-keystore mytruststore
```
2. Enter a password.

Note

This password is required for modifying **mytruststore** in the future. If a trust store does not currently exist, the keytool creates the trust store and then imports the specified certificate.

3. To specify a truststore, execute the following command in the client application command line:

```
-Djavax.net.ssl.trustStore
```

Example:

```
$ java -Djavax.net.ssl.trustStore=mytruststore <MyClient>
<system> root/cimv2 <cimomport> ssl
```

4. If the client application is written to update the truststore file programmatically, you must type the password (the one used to create the truststore):

```
-Djavax.net.ssl.trustStorePassword
```

Example:

```
$ java -Djavax.net.ssl.trustStore=mytruststore  
-Djavax.net.ssl.trustStorePassword=wbem01 <MyClient>  
<system> root/cimv2 <cimomport> ssl
```

Note

See [Port occupation](#) for more information.

Viewing certificates using the keytool command

To view certificates in a certificate file, execute this keytool command.

```
$keytool -printcert -file hpSMIS.cert
```

Viewing all certificates using the keytool command

To view all the certificates in a truststore, execute this keytool command.

```
$keytool -list -v -keystore mytruststore
```

Step 11: Upgrading HP Business Copy EVA (if installed)

Estimated time to complete

45 minutes

If you installed an HP Business Copy EVA v2.3 license in [Step 7: Loading the add-on licenses](#) and your storage solution uses HP Business Copy EVA on the host servers, upgrade to HP Business Copy EVA v2.2 on your host servers and host agents. For complete upgrade instructions, please refer to the following documents:

- *HP StorageWorks Business Copy EVA/MA/EMA Host Agent v2.3 for HP OpenVMS Installation Guide*
- *HP StorageWorks Business Copy EVA/MA/EMA Host Agent v2.3 for HP Tru64 UNIX Installation Guide*
- *HP StorageWorks Business Copy EVA/MA/EMA Host Agent v2.3 for HP-UX Installation Guide*
- *HP StorageWorks Business Copy EVA/MA/EMA Host Agent v2.3 for IBM AIX Installation Guide*
- *HP StorageWorks Business Copy EVA/MA/EMA Host Agent v2.3 for Sun Solaris Installation Guide*
- *HP StorageWorks Business Copy EVA/MA/EMA Host Agent v2.3 for Windows Installation Guide*
- *HP StorageWorks Business Copy EVA/MA/EMA Server v2.3 Installation Guide*

If you are running HP Business Copy EVA and HP Continuous Access EVA, you should also read *HP StorageWorks Business Copy EVA/MA/EMA v2.3 Using BC with Continuous Access EVA and Data Replication Manager Application Notes*.

Step 12: Upgrading HP Continuous Access EVA (if installed)

Estimated time to complete

45 minutes

If you installed an HP Continuous Access EVA v1.2 license in [Step 7: Loading the add-on licenses](#), you will have to upgrade HP Continuous Access EVA on the Storage Management Appliance. For complete upgrade instructions, please refer the *HP StorageWorks Continuous Access User Interface V1.2a Installation Guide*.

Step 13: Migrating Network View to Storage Area Manager

Estimated time to complete

45 minutes

If HP SANworks Network View software is installed on your Storage Management Appliance, you must migrate your Network View environment into Storage Area Manager.

For instructions on how to remove Network View from the Storage Management Appliance, refer to the “Uninstalling SANworks Applications” section in the *HP OpenView Migrating Storage Resource Manager, Storage Allocation Reporter, and Network View to Storage Area Manager Application Notes*.

Step 14: Installing Storage Node Manager (optional)

You can install Storage Node Manager on your Storage Management Appliance, after you have installed HP Command View EVA v3.3. When you install Storage Node Manager, you must also install the EVA Device Plug-In (DPI). DPI allows the Storage Area Manager to support the Enterprise Virtual Array.

Refer to the *HP OpenView Storage Area Manager 3.0 Installation Guide* for information on how to prepare for and install the Storage Node Manager component.

Note

The DPI is not delivered on the Storage Area Manager CD. You can download it from the Storage Area Manager DPI web site at: <http://www.openview.hp.com/products/dpi>. Refer to the *HP OpenView Storage Area Manager EVA Device Plug-In Installation Instructions* for information on how to plan and install the DPI.

Step 15: Disabling SNMP notification to the PRS host

Some Enterprise Virtual Arrays run the Proactive Remote Services (PRS) software to identify potential EVA hardware problems. PRS sends information about hardware problems to an HP Customer Support Center, which provides a solution.

The PRS software, prior to EVA v3.0, used trap-based SNMP notification to report event information about the EVA. With the release of Enterprise Virtual Array v3.0xx, customers are encouraged to upgrade their event reporting functionality with the following tools: Proactive Remote Services (PRS) v5.0 and Web-Based Enterprise Services System Event Analyzer (WEBES-SEA) v4.3.

Note

In some regions, such as Europe, the Middle East, and Africa, the EVAs run Event Viewer EVA (EVE) v2.0 and Instant Support Enterprise Edition (ISEE) vA.02.50 daVinci instead of WEBES-SEA and PRS as their remote error notification solution. If an EVA is using EVE and ISEE, an HP Authorized Service Representative must still disable SNMP-trap notification to the PRS host.

Chapter 4. Downgrading the Enterprise Virtual Array

This chapter contains the information about downgrading the product software on your storage system to a previous version. Please read the instructions completely before you begin the procedure.

This chapter contains the following:

- [Downgrading the Enterprise Virtual Array to v3.01x](#)
- [Downgrading the Enterprise Virtual Array to v2.00x or v3.00x](#)

Downgrading the Enterprise Virtual Array to v3.01x

You can downgrade an Enterprise Virtual Array from v3.025 to v3.01x, if you do an offline downgrade. That is, there can be no I/O from the applications on the host servers.

If you are downgrading the Enterprise Virtual Array storage system from v3.025 to v3.01x, ensure that your system configuration does not contain any new components or structures that are not supported in the VCS v3.01x version. If the storage system does contain unsupported components or data structures, remove these data structures before you downgrade to VCS v3.01x.

If you are running HP Continuous Access, dissolve all DR groups, which can be manually recreated after the downgrade is complete.

Estimated time to complete

15 minutes per storage system

To downgrade the Enterprise Virtual Array system software from version 3.025 to version 3.01x, perform the following steps:

1. Launch HP Command View EVA v3.3.

2. Stop all applications running on the host machines that have access to the storage system you are downgrading. After you have completed the storage system software downgrade, you can start the applications on the host machines.
3. Select the storage system you wish to downgrade.
4. Click **Code load**.
A confirmation message displays.
5. Click **OK**.
The Code Load Storage System page displays.
6. Click **Browse** and select the file containing version 3.01x of the storage system software from the installation CD-ROM.
7. Click **Next Step**.
The Code Load Storage System-Page 2 displays.
8. Click **Next Step**.
A confirmation message displays.
9. Click **OK**.

The new storage system software is loaded onto the HSV controllers, and the firmware on the associated Fibre Channel drive enclosures is modified.

The Code Load Storage System-Page 3 displays. The HSV controllers restart.

Note

The software loads in parallel on the FC drive enclosures. During the software downgrade, the EMUs on the FC drive enclosures might flash red status indicators and sound an alarm. After the software downgrade completes, the flashing red status indicators and alarm sound cease. The process of downgrading the enclosure software continues in the background after the controller software is downgraded.

During the EMU firmware downgrade, all of the disk drives are listed in the Unmappable Hardware folder and all of the disk enclosure bays disappear. The firmware downgrade can take up to 10 minutes to complete. After the downgrade has completed, the disk enclosure bays are listed under the Disk Enclosure elements. The software loads on the HSV controllers. The HSV controllers synchronize using the new software. The *Scanning for disks* message on the controllers' OCPs indicates that synchronization is taking place.

10. Click **Finish** after the HSV controllers have restarted.

The HP Command View EVA client refreshes.

A confirmation message displays.

11. Click **OK**.
12. Refresh the browser.

- In Internet Explorer, press the **Ctrl** key and click **Refresh** in the tool bar.

- In Netscape Navigator, press the **Shift** key and click **Reload** in the tool bar.
13. Click the storage system icon in the Navigation pane to verify the version of the storage system software.
 14. Power down the controllers in the storage system you downgraded.
 15. Power up the next storage system to be downgraded.
 16. Repeat step 3 through step 15 until you have downgraded all storage systems.
 17. Reboot the Storage Management Appliance.

All of the storage systems in your SAN have now been downgraded.

Downgrading the Enterprise Virtual Array to v2.00x or v3.00x

If you wish to downgrade the existing VCS v3.025 to v2.00x or v3.00x, you may do so if your Enterprise Virtual Array contains no data and is uninitialized. You may downgrade the system software from v3.025 to v2.00x or v3.00x after you upgrade to HP Command View EVA v3.3. HP Command View EVA v3.3 is compatible with VCS v2.003 and later.



Caution

Do not downgrade your storage system if it has been initialized or contains any data. You can only downgrade storage systems that are uninitialized and do not contain any data. If you attempt to downgrade an initialized storage system, you will lose any configuration information or data in that storage system. All existing data will be destroyed when you downgrade from v3.025 to v2.00x or v3.00x. HP Continuous Access is not supported in any 2.00x version.

Estimated time to complete

15 minutes per storage system

To downgrade the Enterprise Virtual Array system software from version 3.025 to version v2.00x or v3.00x, perform the following steps:

1. Shut down and power off all presented hosts that have access to the storage system you wish to downgrade.
2. If you are running multiple storage systems in your SAN, shut down all but one of the storage systems to be downgraded.
3. On the HSV controller OCP, select Shutdown/Uninitialize System.
4. Reboot the Storage Management Appliance.
5. Open HSV Element Manager (or HP Command View EVA v3.3, if installed).
6. Select the storage system you wish to downgrade.
7. Click **Code load**.

A confirmation message displays.

8. Click **OK**.

The Code Load Storage System page displays.

9. Click **Browse** and select the file containing version 2.00x or 3.00x of the storage system software from the installation CD-ROM.
10. Click **Next Step**.

The Code Load Storage System-Page 2 displays.

11. Click **Next Step**.

A confirmation message displays.

12. Click **OK**.

The new storage system software is loaded onto the HSV controllers, and the firmware on the associated Fibre Channel drive enclosures is modified.

The Code Load Storage System-Page 3 displays. The HSV controllers restart.

Note

The software loads in parallel on the FC drive enclosures. During the software downgrade, the EMUs on the FC drive enclosures might flash red status indicators and sound an alarm. After the software downgrade completes, the flashing red status indicators and alarm sound cease. The process of downgrading the enclosure software continues in the background after the controller software is downgraded.

During the EMU firmware downgrade, all of the disk drives are listed in the Unmappable Hardware folder and all of the disk enclosure bays disappear. The firmware downgrade can take up to 10 minutes to complete. After the downgrade has completed, the disk enclosure bays are listed under the Disk Enclosure elements. The software loads on the HSV controllers. The HSV controllers synchronize using the new software. The *Scanning for disks* message on the controllers' OCPs indicates that synchronization is taking place.

13. Click **Finish** after the HSV controllers have restarted.

The HP Command View EVA client refreshes.

A confirmation message displays.

14. Click **OK**.

15. Refresh the browser.

- In Internet Explorer, press the **Ctrl** key and click **Refresh** in the tool bar.
- In Netscape Navigator, press the **Shift** key and click **Reload** in the tool bar.

16. Click the storage system icon in the Navigation pane to verify the version of the storage system software.

17. Power down the controllers in the storage system you downgraded.

18. Power up the next storage system to be downgraded.

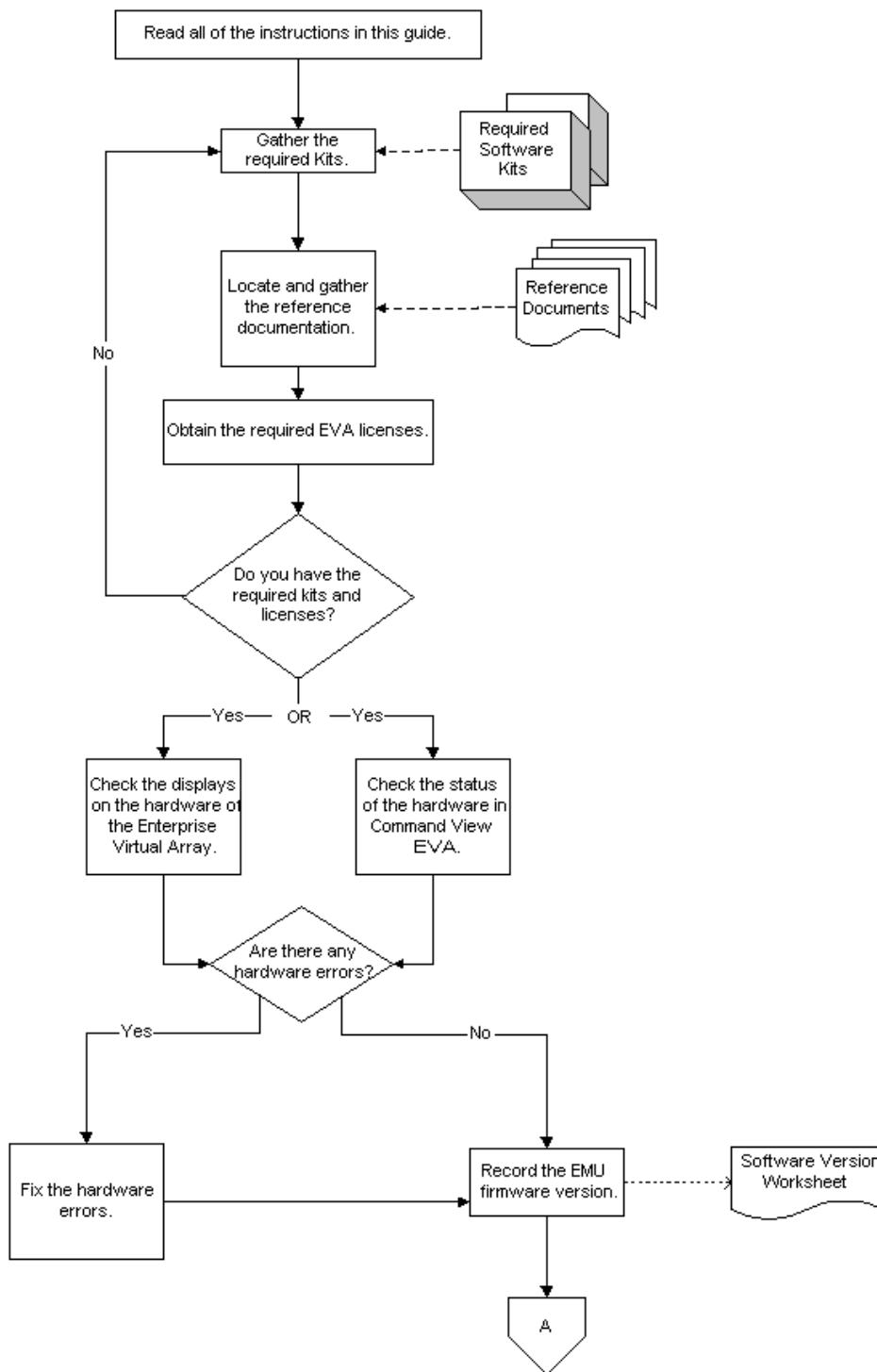
19. Repeat step 3 through step 18 until you have downgraded all v3.025 storage systems to v2.00x or v3.00x.

20. Reboot the Storage Management Appliance.

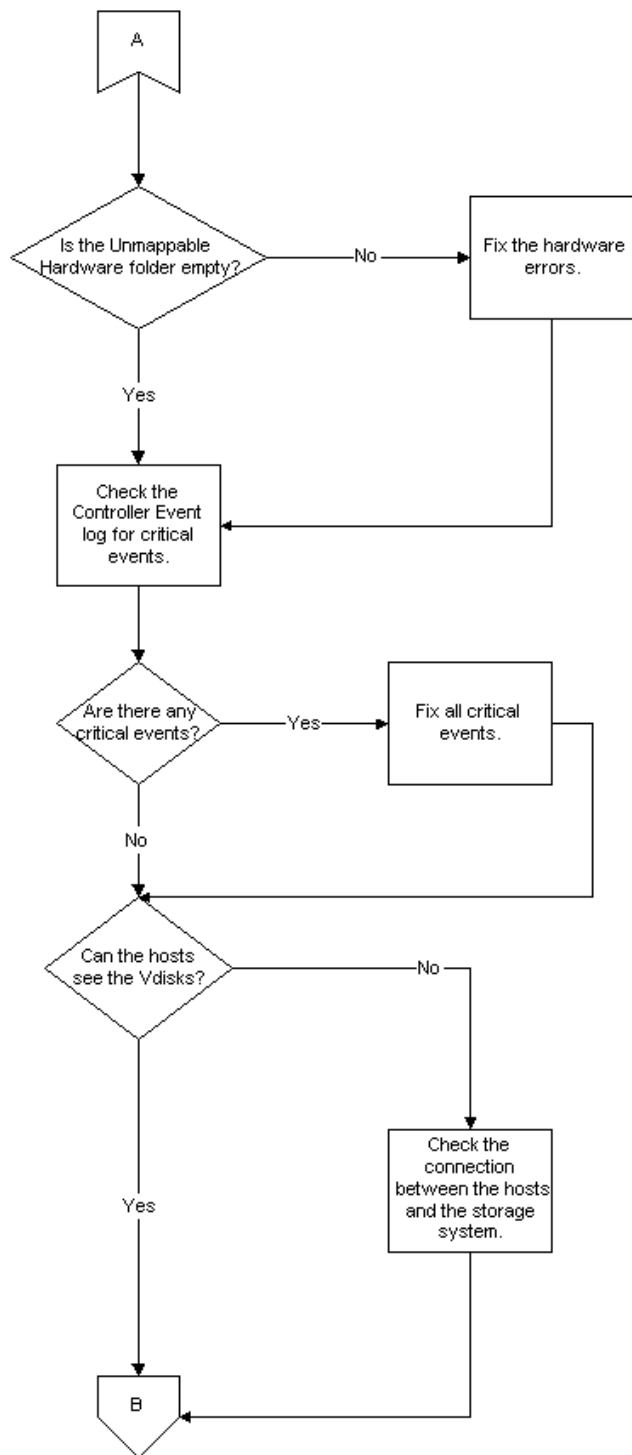
All of the storage systems in your SAN have now been downgraded to v2.00x or v3.00x.

Appendix A. Software Upgrade Flowchart

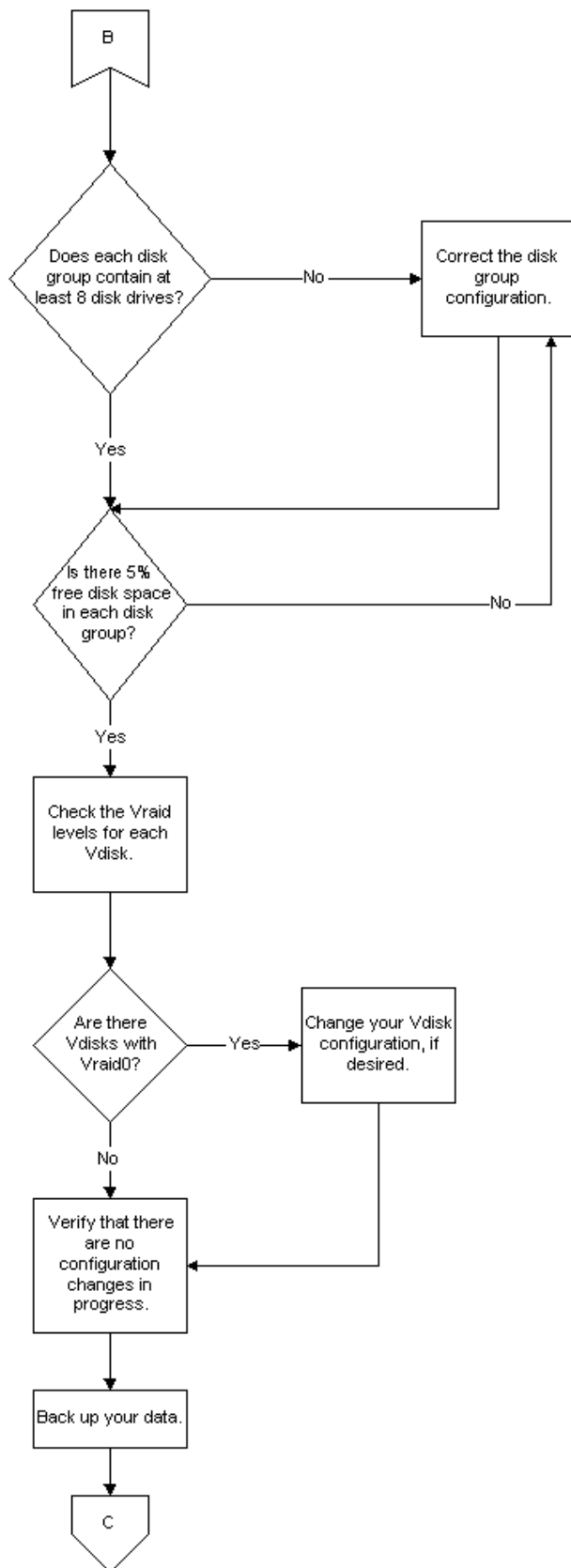
This appendix provides a flowchart of the Enterprise Virtual Array software upgrading process.



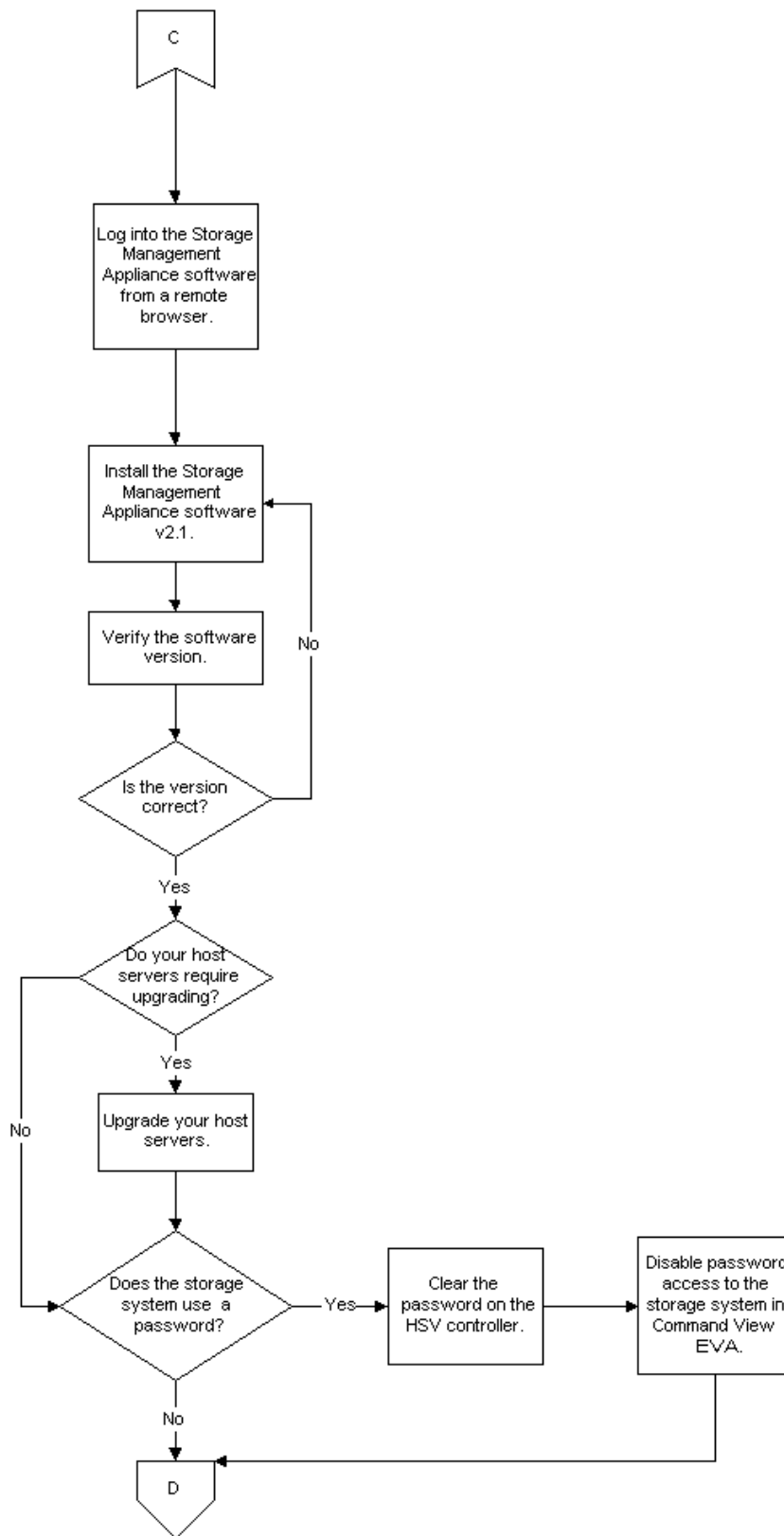
Flowchart 1



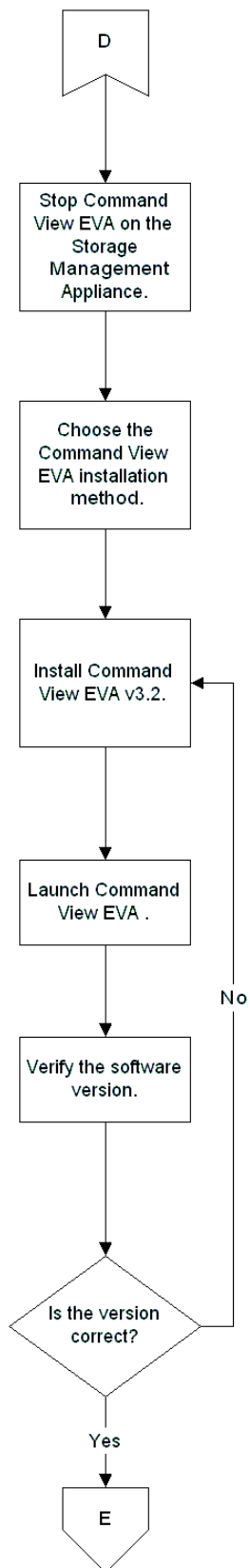
Flowchart 2



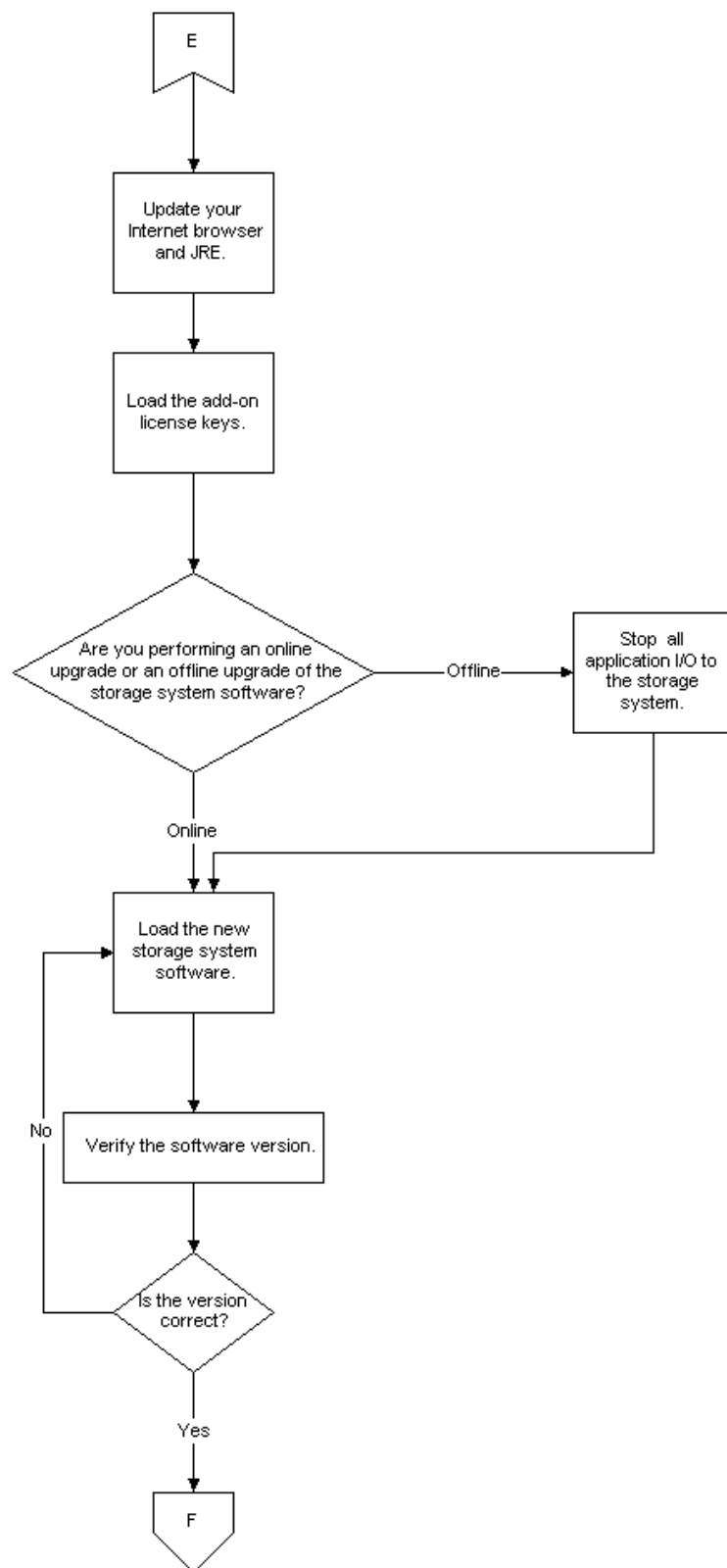
Flowchart 3



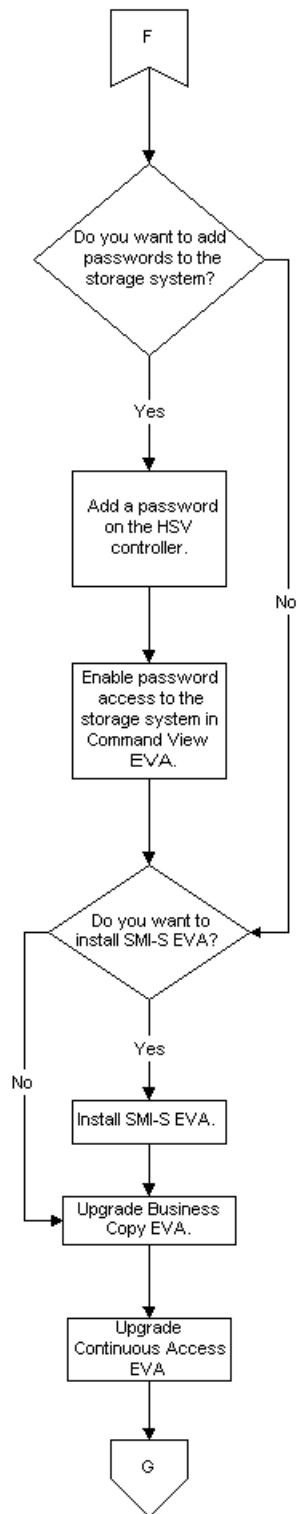
Flowchart 4



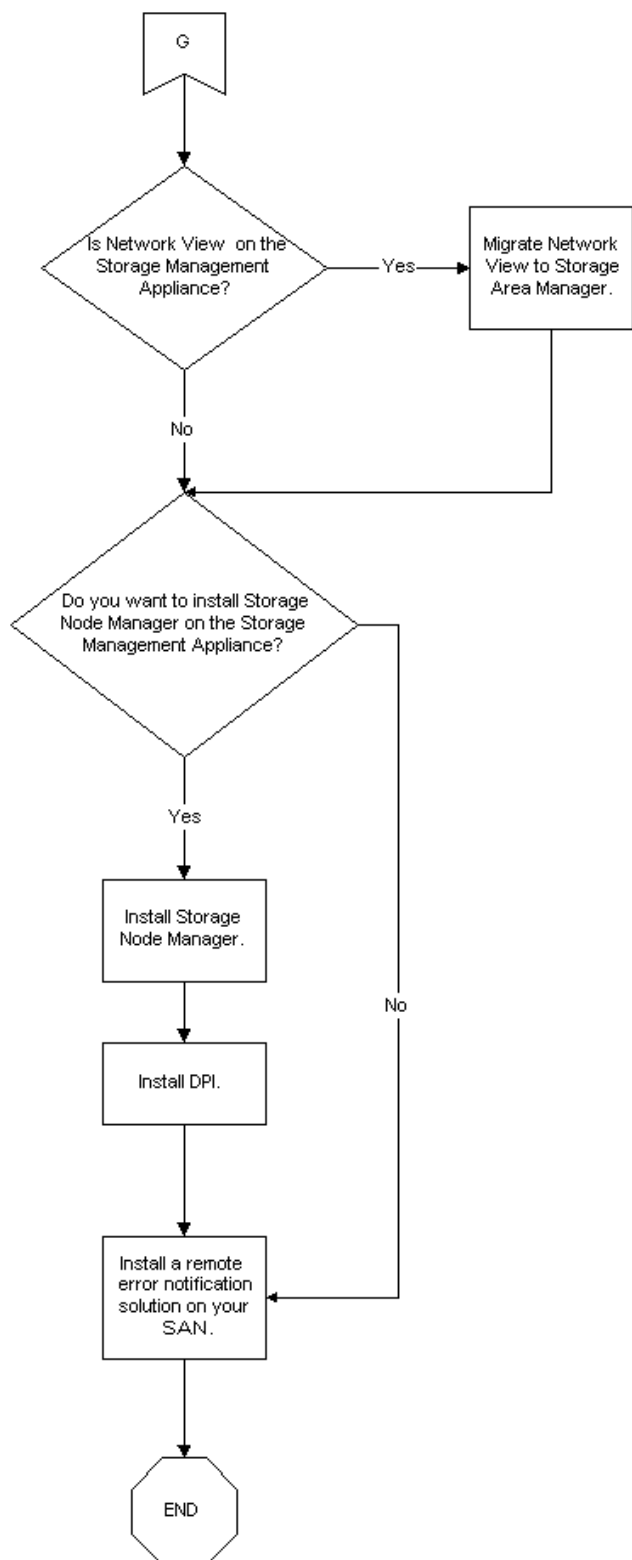
Flowchart 5



Flowchart 6



Flowchart 7



Flowchart 8

Appendix B. Software Version Worksheet

As you perform the procedures in this guide, use [Table B.1](#) in this appendix to record the necessary software version information and track your product upgrade.

Table B.1. Software Version Worksheet

	Current Version	Required Version	Version After Upgrade	Installation Successful?
Storage Management Appliance Software				
HP Command View EVA				
Internet Browser				
JRE				
HP Business Copy EVA license key				
Virtual Controller Software				
EMU firmware				
Replication Solutions Manager				
Off-Appliance Management Software				

Notes

[illegible]

Appendix C. Troubleshooting SMI-S EVA

Starting and stopping SMI-S EVA

You can manually start and stop SMI-S EVA from the Storage Management Appliance Manage Tools page.

To start or stop the SMI-S EVA service, perform the following steps:

1. Click **Settings** on the Storage Management Appliance home page.
The Settings page displays.
2. Click **Manage Tools** on the Settings page.
The Manage Tools page appears.
3. Click the check box next to **hp StorageWorks SMI-S for EVA** and click **Start/Stop** under **Tasks**.

Troubleshooting SMI-S EVA

This section explains the commonly-occurring problems that you may face with SMI-S EVA.

Table C.1. Troubleshooting Tips for SMI-S EVA

Item	Action
SMI-S EVA Service failed to start.	Check the service registration. Check the event log details.
SMI-S EVA Service is not able to populate data.	Check to see if the directory <i>C:\Program Files\Hewlett-Packard\SMI-S\cimom\persitence\classes\root\EVA</i> is empty. If the directory is empty, load the mofs by invoking the batch file LoadEvaMofs.bat in <i>C:\Program Files\Hewlett-Packard\SMI-S\ EVAProvider</i> . Ensure that the Storage Management Appliance name and port number are correct.
SMIS-EVA failed to retrieve data.	Check whether the appliance is active or passive. If the appliance is passive, access to the array is limited; only the enumeration of storage cells work. Check whether the HP Command View EVA is running from the Storage Management Appliance Manage Tools page (select Settings->Manage Tools). Ensure that the HP Command View EVA and hp StorageWorks SMI-S for EVA applications are running. If any of these applications are not running, select the application, and click Start .

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Version 1.1

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Glossary

This glossary defines terms used in this guide or related to this product and is not a comprehensive glossary of computer terms.

active member of a virtual disk family	An active member of a virtual disk family is a simulated disk drive created by the controllers as storage for one or more hosts. An active member of a virtual disk family is accessible by one or more hosts for normal storage. An active virtual disk member and its snapshot, if one exists, constitute a virtual disk family. An active member of a virtual disk family is the only necessary member of a virtual disk family.
HP Command View EVA	The graphical user interface (GUI) through which a user can control and monitor a storage system. HP Command View EVA can be installed on more than one storage management appliance in a fabric. Each installation is a management agent. The client for the agent is a standard Web browser.
controller	A hardware/firmware device that manages communications between host systems and other devices. Controllers typically differ by the type of interface to the host and provide functions beyond those the devices support.
controller event	A significant occurrence involving any storage system hardware or software component reported by the controller to HP Command View EVA.
controller pair	Two interconnected controller modules which together control a physical disk array. A controller pair and the disk array together constitute a storage system.
corrective action code	An HP Command View EVA graphical user interface (GUI) display component that defines the action required to correct a problem.
CRITICAL Condition	A disk drive enclosure EMU condition that occurs when one or more disk drive enclosure elements have failed or are operating outside of their specifications. The failure of the element makes continued normal operation of at least some elements in the enclosure impossible. Some enclosure elements may be able to continue normal operations. Only an UNRECOVERABLE condition has precedence. This condition has precedence over NONCRITICAL errors and INFORMATION condition.

disk drive enclosure	A unit that holds storage system devices such as disk drives, power supplies, blowers, I/O modules, transceivers, or EMUs.
disk drive enclosure event	A significant operational occurrence involving a hardware or software component in the disk drive enclosure. The disk drive enclosure EMU reports these events to the controller for processing.
disk group	A physical disk drive set or pool in which a virtual disk is created. A disk group may contain all the physical disk drives in a controller pair array or a subset of the array.
EIP	Event Information Packet. The event information packet is an HSV element hexadecimal character display that defines how an event was detected. <i>Also</i> called the EIP type.
Element Manager GUI	The graphical user interface (GUI) through which a user can control and monitor a storage system. HP Command View EVA can be installed on more than one storage management appliance in a fabric. Each installation is a management agent. The client for the agent is a standard Web browser.
element	<ol style="list-style-type: none">1. In a disk drive enclosure, a device such as an EMU, power supply, disk, blower, or I/O module. The object can be controlled, interrogated, or described by the enclosure services process.2. In the Storage Management Appliance software, a controllable object, such as the Enterprise storage system.
EMU	Environmental Monitoring Unit. An element which monitors the status of an enclosure, including the power, air temperature, and blower status. The EMU detects problems and displays and reports these conditions to a user and the controller. In some cases, the EMU implements corrective actions.
enclosure	A unit used to hold various storage system devices, such as disk drives, controllers, power supplies, an EMU, I/O modules, or blowers.
Enterprise Virtual Array	The Enterprise Virtual Array is a product that consists of one or more storage systems. Each storage system consists of a pair of HSV controllers and the disk drives they manage. A storage system within the Enterprise Virtual Array can be formally referred to as an Enterprise storage system, or generically referred to as the storage system.
Enterprise Virtual Array rack	A unit that holds controller enclosures, disk drive enclosures, power distribution supplies, and enclosure address buses that, combined, comprise an Enterprise storage system solution. <i>Also</i> called the Enterprise storage system rack. <i>See also</i> rack.
event	Any significant change in the state of the Enterprise Storage System hardware or software component reported by the controller to HP Command View EVA. <i>See also</i> controller event, disk drive enclosure event, management agent event, and termination event.
fabric	A Fibre Channel fabric switch or two or more interconnected Fibre Channel switches that allow data transmission.
Fibre Channel	A data transfer architecture designed for mass storage devices and other peripheral devices that require very high bandwidth.

Gb	<p>Gigabit. A measurement of the rate at which the transfer of bits of data occurs. Sometimes referred to as Gbps. Nominally, a Gb is a transfer rate of 1,000,000,000 (10⁹) bits per second.</p> <p>For Fibre Channel transceivers or FC loops the Gb transfer rates are:</p> <ul style="list-style-type: none">• 1 Gb is a transmission rate of 1,062,500,000 bits per second.• 2 Gb is a transmission rate of 2,125,000,000 bits per second.
GUI	<p>Graphical User Interface. Software that displays the status of a storage system and allows its user to control the storage system.</p>
host	<p>A computer that runs user applications and uses (or can potentially use) one or more virtual disks created and presented by the controller pair.</p>
HSV Element Manager	<p>The graphical user interface (GUI) through which a user can control and monitor a storage system. HSV Element Manager can be installed on more than one storage management appliance in a fabric. Each installation is a management agent. The client for the agent is a standard Web browser. Versions later than 2.0 are called HP Command View EVA.</p>
I/O module	<p>Input/Output module. The enclosure element that is the FC-AL interface to the host or controller. I/O modules are bus speed specific, either 1 Gb or 2 Gb.</p>
initialization	<p>A process that prepares a storage system for use. Specifically, the system binds the controllers together as an operational pair and establishes preliminary data structures on the disk array. Initialization also sets up the first disk group, called the default disk group.</p>
LED	<p>Light Emitting Diode. A semiconductor diode, used in an electronic display, that emits light when a voltage is applied to it.</p>
license key	<p>A WWN-encoded sequence that is obtained from the license key fulfillment web site.</p>
LID	<p>A Loop Initialization Disruptor (LID) condition exists when a drive prevents loop initialization from completing on a loop, causing the failure of both loops and loss of access to customer data. If this happens, LID recovery is executed by the EVA to attempt to isolate and bypass the drive.</p>
logon	<p><i>Also</i> called login, a procedure whereby a user or network connection is identified as being an authorized network user or participant.</p>
management agent	<p>The HP Command View EVA software that controls and monitors the Enterprise Storage System. The software can exist on more than one management appliance in a fabric. Each installation is a management agent.</p>
management agent event	<p>A significant occurrence to or within the management agent software, or an initialized storage cell controlled or monitored by the management agent.</p>
metadata	<p>Information that a controller pair writes on the disk array. This information is used to control and monitor the array and is not readable by the host.</p>
OCP	<p>Operator Control Panel. The element that displays the controller's status using status indicators and an LCD. Information selection and data entry is controlled by the OCP pushbuttons.</p>

offline upgrade	During an offline upgrade of the storage system software, VCS is upgraded on the HSV controllers, while there is no I/O from the applications on the host servers. During offline upgrades the HSV controllers are rebooted. Offline upgrades are required when the HSV controllers or Storage Management Appliance must be rebooted after loading VCS or other software. Also called a shutdown upgrade.
online upgrade	During an online upgrade of the storage system software, VCS is upgraded on the HSV controllers, while they are still receiving I/O from the applications on the host servers. During a VCS online upgrade, the HSV controllers do reboot at the same time (usually within host OS timeout periods). Online upgrades should be conducted at off peak hours. Database applications with access to the storage system should not be running.
OpenView Storage Management Appliance Software	A centralized, appliance-based monitoring and management interface that supports multiple applications, operating systems, hardware platforms, storage systems, tape libraries, and SAN-related interconnect devices. It is included in, and resides on, the OpenView Storage Management Appliance, a single aggregation point for data management.
password	A security interlock where the purpose is to allow: <ul style="list-style-type: none">• A management agent to control only certain storage systems• Only certain management agents to control a storage system.
physical disk	A disk drive mounted in a disk drive enclosure that communicates with a controller pair through the device-side Fibre Channel loops. A physical disk is hardware with embedded software, as opposed to a virtual disk, which is constructed by the controllers. Only the controllers can communicate directly with the physical disks. The physical disks, in aggregate, are called the array and constitute the storage pool from which the controllers create virtual disks.
push button	A switch that is engaged or disengaged when it is pressed.
rack	A floor-standing structure primarily designed for, and capable of, holding and supporting storage system equipment. All racks provide for the mounting of panels per Electronic Industries Alliance (EIA) <i>Standard RS-310-C</i> .
SAN	Storage Area Network.
snapshot	A temporary virtual disk (Vdisk) that reflects the contents of another virtual disk at a particular point in time. A snapshot operation is only done on an active virtual disk. Up to seven snapshots of an active virtual disk can exist at any point. The active disk and its snapshot constitute a virtual family.
storage system software	The storage system software consists of VCS and EMU firmware.
termination event	An occurrences that causes the storage system to cease operation.
uninitialized system	A state in which the storage system is not ready for use. <i>See also</i> initialization.
VCS	Virtual Controller Software. Provides storage controller software capability for the HSV controller.

Vdisk	Virtual Disk. A simulated disk drive created by the controllers as storage for one or more hosts. The virtual disk characteristics, chosen by the storage administrator, provide a specific combination of capacity, availability, performance, and accessibility. A controller pair simulates the characteristics of the virtual disk by deploying the disk group from which the virtual disk was created. The host computer sees the virtual disk as “real,” with the characteristics of an identical physical disk.
virtual disk family	A grouping that consists of a virtual disk and its snapshot, if a snapshot exists. The original virtual disk is called the active disk. When you first create a virtual disk family, the only member is the active disk.
Vraid0	A virtualization technique that provides no data protection. A data host is broken down into chunks and distributed on the disks comprising the disk group from which the virtual disk was created. Reading and writing to a Vraid0 virtual disk is very fast and makes the fullest use of the available storage, but there is no data protection (redundancy) unless there is parity.
Vraid1	A virtualization technique that provides the highest level of data protection. All data blocks are mirrored or written twice on separate physical disks. For read requests, the block can be read from either disk, which can increase performance. Mirroring takes the most storage space because twice the storage capacity must be allocated for a given amount of data.
Vraid5	A virtualization technique that uses parity striping to provide moderate data protection. Parity is a data protection mechanism for a striped virtual disk. A striped virtual disk is one where the data to and from the host is broken down into chunks and distributed on the physical disks comprising the disk group in which the virtual disk was created. If the striped virtual disk has parity, another chunk (a parity chunk) is calculated from the set of data chunks and written to the physical disks. If one of the data chunks becomes corrupted, the data can be reconstructed from the parity chunk and the remaining data chunks.
WWN	World Wide Name. A unique Fibre Channel identifier consisting of a 16-character hexadecimal number. A WWN is required for each Fibre Channel communication port.

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